

# The relative Value Relevance of Cash Flow Accounting Disclosures by South African Banks

By: Jake Trehaveen (TRHJAK001)

Submitted to the Department of finance and tax, on the 10<sup>th</sup> of August 2016, in partial fulfilment of the requirements for the degree: Master in financial management



## Abstract:

During recent decades, researchers have developed the value relevance method of accounting based research. Value relevance, at its core, attempts to describe the information usefulness of a disclosure figure in relation to the impact it has on the market values of a given stock. Much of the focus of this research, both internationally and locally, has been based on earnings or balance sheet disclosures with little attention being paid to other sections of disclosure.

This study takes the use of value relevance methods one step further and analyses the information usefulness of operating cash flow disclosures of financial firms versus non-financial firms in a South African context. The study proceeds to explain and then test the presumption that the nature of the banking business model makes operating cash flow disclosures irrelevant; some interesting and somewhat counter-intuitive results are obtained.

Supervisor: Prof. Phillip De Jager

Keywords: value relevance, Cash Flow Accounting, earnings, book value of equity, financial firms, panel data, regression modelling

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

## Plagiarism declaration

I know that plagiarism is wrong. Plagiarism is to use another's work while pretending that it is one's own.

This paper entitled: "The relative Value Relevance of Cash Flow Accounting Disclosures by South African Banks." is my own work.

Each significant contribution to, and quotation in, this paper from the work(s) of other people has been attributed, and has been cited and referenced. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

Signature .....  
Signed by candidate  
Signature removed

## *Acknowledgments*

Firstly, I would like to thank my supervisor, Phillip. Your guidance, patience and input throughout the past year, and longer, have been invaluable. This paper would not have been completed had it not been for your prompt and insightful responses to my queries. I would also like to thank all the academic staff who were involved during the six years that I spent studying and working at the University of Cape Town. The high calibre of the academic body made it much easier for me to reach this point.

I would also like to thank my mother, Victoria, for always providing me with the support needed throughout my studies. I thank my father, Peter, for providing me with counsel in times of disbelief.

## Contents

1. Introduction.....	5
2. Literature Review .....	7
<i>The users of financial statements</i> .....	7
<i>The standard setting process</i> .....	9
<i>Existing value relevance research</i> .....	13
<i>The value relevance of the earnings or income statement figures</i> .....	14
<i>A component approach to the value relevance of earnings information</i> .....	16
<i>The value relevance of the stock measurements or balance sheet figures</i> .....	16
<i>The value relevance of Cash Flow items.</i> .....	18
<i>Understanding Cash Flow disclosures as required by IAS 7</i> .....	19
<i>How are bank's cash flows different from non-financial firms?</i> .....	22
<i>Concluding remarks</i> .....	23
3. Hypotheses Statements.....	24
4. Data and Method .....	25
<i>Data</i> .....	25
<i>Variables from data</i> .....	26
<i>Method</i> .....	28
5. Results .....	33
<i>Table 2 - Summarised Findings</i> .....	33
<i>Results discussion</i> .....	35
6. Concluding remarks and suggestions for further investigation .....	36
7. Reference List .....	38
Appendices .....	42

## 1. Introduction

In light of the ever-changing accounting standards and increased levels of disclosures required, accounting based researchers have begun to study the incremental increase in the information usefulness of the disclosures produced by companies. It has been argued that the fundamental objective of financial reports is to communicate economic measures about the resources and performance of the reporting entity (Parker 1982). Moreover, it has been stated that the development of accounting standards should lead to a higher level of quality and information usefulness (Torfason, 2014). It has also been argued that whenever a disclosure does not provide useful information, a company should not be required to provide it, as the required effort results in a wasteful allocation of resources (Zhan et al., 2015).

This paper seeks to investigate the information usefulness of cash flow disclosures for South African financial firms listed on the Johannesburg Stock Exchange (JSE). Bankers and researchers have long argued that the current standards which inform the way in which companies must disclose their cash flows, IAS 7 and FAS 95 (part of US GAAP) amongst others, are irrelevant and arbitrary for financial institutions (Mulford & Comiskey, 2009). In order to test the preconceived notion that cash flow disclosures are irrelevant for banks, this paper starts by reviewing the existing literature surrounding value relevance as a research method and cash flow accounting in banks as a concept.

The literature review section of this paper begins by considering research and commentary about the users of financial statements: who they are and what roles each potential type of user plays. Having established this, the purpose of the financial statements for the user is explored. It is then noted that different users have differing informational needs. The first mention of the value relevance method is made here to contextualise prior research performed.

The literature review then begins to examine the standard setting process. It is pivotal to understand the mandate of those charged with the process for setting out what is to form part of a set of financial statements. Discrepancies between GAAP and IFRS are explained and the plan for convergence between the two accounting bodies is established. The purpose of what an accounting standard is meant to achieve and reasons why those standards potentially fail to meet their purpose are discussed in great detail. The overall conclusion drawn from this section of the literature review is that over time, accounting disclosures should seek to provide information that is increasingly useful to the users. Moreover, it is the task of the standard setters to make this happen.

Next, the literature review begins to explore the method of value relevance in more depth. Here, reference is made to its unintended beginning by Ball and Brown (1968), leading on to the more recent methods as described by Barth et al. (2005), Francis and Schipper (1999) and Beaver et al. (1997) amongst many others. The development of the method sheds light on its uses and exposes its limitations. Focus is placed on the path that value relevance research has taken, having started out as event studies on earnings and having now developed into periodic studies on different disclosures that span across a set of financial statements.

At this point in the literature survey, a gap is found. Thus, there appears to be very little attention focused on cash flow disclosures. Given the nature of the banking industry, the ability to test the information usefulness of cash flows value relevance as a method seems appealing. The small amount of literature that exists on this topic is reviewed to contextualise and frame the rest of this paper.

From here the literature review moves on to focus on IAS7, which is the IFRS standard that covers cash flow disclosures. The intention is again to contextualise an understanding of what these disclosures are meant to provide and why such information is currently seen as being relevant. The areas of disclosure are categorised, and this is followed by an exploration of the various reasons, cited in current literature, as to why the standard seems inappropriate. This is done by highlighting the fundamental differences between the way cash flows through a bank, in contrast to any other type of business.

The conclusion of the literature review summarises the findings given above, then points out the direction for further research.

Section 3 of this paper outlines and states the hypotheses to be tested. The hypotheses are broken up into two broad tests. The first establishes whether the commonly tested disclosures, earnings and book value of equity, have similar results in the sample to those of research done globally. The second then introduces the use of the cash flow disclosure to test the usefulness of this disclosure in context.

Section 4 describes the data collection and method used for testing.

The data were collected from a sample of financial and non-financial South African firms that are listed on the Johannesburg Stock Exchange (JSE.) The sample selection process is described, as well as the variables forming part of the data set used.

The method section provides a detailed description of the design of the regression models used to test the informational content of the data items selected in the sample. Because of the nature of the data, panel econometric techniques are discussed to ensure that the modelling process follows best practice while avoiding incorrect inferences from the results. The highlighted issues are scaling, autocorrelation of error terms, fixed effect modelling and limitations of the modelling process. Finally this section describes the model formation that will form the output of the regressions.

Section 5 comprises two sub-sections. The first of these presents the basic results of the regression models and this is followed by a discussion of the results in the context of the hypotheses set out in section 3.

Section 6 makes concluding remarks on the findings of the research and then suggests areas for further investigation.

### *Assumptions going forward*

Financial statements, and the standards on which they are based, are designed to provide investors with information which is useful for decision making.

Accordingly, the market values of the shares of the companies in the sample selected for this study are indeed influenced by the accounting disclosures.

### *Delimitations*

The primary task of this paper is to seek to identify whether a difference exists between banks and other non-financial firms, as far as the value relevance of cash flow from operations disclosures is concerned. The models described in this paper are set up in a way that accommodates the testing of the value relevance of earnings figures as well as balance sheet figures for the samples. The objective is to attempt to confirm the base line presumption that the sample does portray significant value relevance results. This is done as a stepping stone in order to test the cash flow component which is later added to the models, as discussed below.

This paper will not attempt to explain market value movements caused by factors beyond disclosures in company financial statements.

## *2. Literature Review*

This literature review provides a summary of the current literature, both international and local; this summary provides the context for the ultimate research questions posed in this paper.

First an outline of “the users of financial statements” is established. Here the purpose of the financial statements and the objectives of “the users of financial statements” are narrowed to focus on equity investors. Secondly, the standard setting process is discussed. Thus, the role of the standard setters is established with respect to information creation for the users of financial statements; again, the focus is on equity investors. Next the literature on value relevance is explored and this exercise comprises a large part of this literature review. Here, a comprehensive review of the concepts and conclusions drawn by value relevance research is provided; from its unintended creation to its current uses. Gaps in the current literature are identified and are discussed in some detail.

The focus then shifts to cash flow disclosure in accordance with IAS 7 and in the context of financial and non-financial institutions. Here the cash flow requirements for all IFRS reporting entities are contextualised for the purpose of further research. Reference is made to the difficulties regarding cash flow accounting in banks and there is discussion of why this may intuitively appear to have less value relevance than the non-financial firms.

Finally concluding remarks are made in the context of the topics discussed. Conclusions are drawn on the issue of why value relevance testing for financial firms, in a South African context, would be appropriate.

### *The users of financial statements*

Financial statements are seen as a significant source of information for decision makers all over the world. The high level of commitment to the accuracy, detail and usefulness of these reports by reporting entities provides an indication of the significance of the reports to individuals and other entities. The substantial investment made by reporting entities in creating these reports further illustrates how vital these are in disclosing the performance and position of an entity.

Parker (1982) found that the fundamental objective of financial reports is to communicate economic measures about the resources and performance of the reporting entity; such information should be useful to those having reasonable rights to it. Principally, the economic status of the firm is the fundamental issue in the message provided by any accounting based communication (Parker, 1982). The idea of usefulness has been central in the definition of the objective of financial statements since the 1970s and still is the centrepiece in the conceptual framework for both FASB and IASB. (Torfason, 2014:6)

Scott (2006:24) writes that a primary objective in creating a set of financial statements is to communicate information that is useful and value adding to the user; a secondary objective is for the use of financial reports to be seen as tool for the assessment process of management’s stewardship of



the entity. This paper focuses on the usefulness of financial statements in the hands of an investor. As mentioned by Torfason (2014), the information contained in financial statements is useful for a range of other individuals and entities including, but not limited to: employees, lenders, suppliers, customers, governments, tax officials and the general public. Whilst these other entities or stakeholders are important, the current literature provides little insight into ways of testing, empirically, the level of usefulness of financial statements to those other entities or stakeholders. As discussed below, common types of accounting based research rely on the ability to analyse quantitative metrics. It would be almost impossible to establish the same quantitative measures for these other stakeholders because of the nature of their use of the financial statements. In view of this, this paper will focus on only the equity investors as “users of the financial statements”.

Scott (2006:76) points out that investors may use an entity’s financial statements to try and predict its future performance based on its historic profits and other financial indicators disclosed in those statements. Scott (2006) also states that investors may use this past performance as an indication of future potential in line with verbal statements made by management which describe their aspirations for the entity. Beyond the current and past performance measures disclosed in a set of financial statements of an entity, the risks associated with that entity’s equity may be gauged from those statements by assessing common indicators such as liquidity, solvency, profitability, leverage and cash flows. Scott (2006:78) consequently argues that financial statements are useful when conducting a fundamental valuation of the market value of the equity of an entity or when using this information as part of a decision making process when assessing alternative investment opportunities. Scott’s views are supported by statements made by Torfason (2014), Bao and Bao (2004), Klimczak (2009) and Francis and Schipper (1999), amongst many others, all of whom mention the use of accounting based disclosures in the process of valuing a firm’s equity.

It is important to understand why investors would use financial statements when allocating resources or making investment decisions. Mainstream finance theory treats investment decisions as a rational activity based on perfect information, partly provided by accounting based reports (Torfason 2014). The investor is assumed to follow a rational approach based on access to publically available financial information pertaining to a listed entity. This paper will not attempt to examine whether market participants are indeed rational. Rather, the focus will be on whether investors actually use the information provided by the financial reports to inform their decision making process and to what extent this information plays a role in informing stock values. The decisions made by investors would generally include whether or not they should continue to hold an equity stake, purchase an equity stake or sell off a current equity stake; such decisions should presumably be based on figures reported in the financial statements. This can be seen as the reaction to accounting disclosures as and when they are released, leading to a change in the demand or supply for a particular security.

If the users of financial statements are potential or current investors in the entity, then the essence of creating financial reports should be to ensure that the investors are supplied with information to help them make good investment decisions (Scott 2006:78). If the information provided in this process is not useful then one could argue that its creation would be of less value and therefore an inefficient allocation of the resources needed to create such reports.

A secondary focus of this paper is to examine whether investor’s decisions are informed by the financial statements. Nevertheless, it is also noted that, as discussed by Jagongo and Mutswenje (2014), there is a general belief that investment decisions are a function of several factors in addition to accounting

information found in disclosures; these factors include market characteristics and individual risk profiles.

The assessment of the use of accounting information by investors is not a new concept. Thus, the notion of empirically testing accounting based figures in relation to security prices was first considered by Ball and Brown in 1968 in their paper entitled “An Empirical Evaluation of Accounting Income Numbers.” Beisland (2009:7) noted that whilst Ball and Brown’s research was not strictly following the value relevance method, it has been argued as being the starting point from which that research method began. What followed was the creation of a method for testing the informational content of accounting based figures with respect to market prices by using what researchers now term as value relevance testing. Barth et al. (2001:79) argue that the defined research method of value relevance was not wholly developed until 1993.

In their brief contextualising of the findings of value relevance research since its inception, Francis and Schipper (1999) used the same underlying methods as those of Ball and Brown in (1968); found that accounting based earnings figures have lost some of their value relevance while the relevance of balance sheet and book value information had increased in significance. This is probably the result of an increased level of accuracy of balance sheet disclosure as entities have moved towards recognising more assets and liabilities at fair value as opposed to historical disclosures which may have relied on book values or historical cost based measures. Accordingly, investors have had to rely less on earnings and are able to use other items appearing in the financial statements to inform their decision process as the quality of reporting has improved over time. Francis and Schipper’s (1999) results confirmed conclusions made in research performed by Collins et al. (1997), Ely and Waymire (1999) and, Lev and Zarowin (1999). All these writers found that whilst the usefulness of certain line items from financial statements has decreased, the usefulness of other items had increased. Notably, all the papers mentioned above indicated that financial statements combined with other reported figures are regarded as having high levels of relevant informational content for investors.

Users of the financial statements, in an equity investor context, still rely on the numbers published in those statements to inform their decision making process. This mechanism allows researchers to draw links between accounting based disclosures and market values of equity. In view of the prevalence of findings over the past few decades one can conclude that equity investors do indeed use financial statement information and by testing different disclosures we can assess which are more or less relevant to those investors, than others.

### *The standard setting process*

Given the assumption that investors, amongst others, use financial reports in their decision making process it is important to understand how accounting information is compiled and disclosed. In an ideal world every entity would follow the same process, whether principle or rule based, in recording and reporting accounting based disclosures. However, there are several ways in which entities formulate their financial statements. This situation has the potential to give conflicting results when performing a quantitative analysis.

At present, an entity’s past performance and current financial position, as disclosed in its financial statements, are generally based on a set of standards and guidelines. These are provided either by a form of Generally Accepted Accounting Principles (GAAP), which are often amended to be country

specific, or the entity may report in line with the IASB's International Financial Reporting Standards (IFRS), which also allow for geographical differences in certain circumstances. The fact that there are differing rules which are determined predominately by an entity's geographic location, rather than by differing business practices, can cause major problems for the users of financial information. Scott (2006) notes that the ability of investors to obtain information useful for decision making may be compromised by their ability to interpret the information provided. Scott (2006) also states that the differences in standards and reporting guidelines often result in inconsistencies in the past performance and current financial position even when applied separately to the same entity.

This position is supported by the conclusions reached by Barth et al. (2012:3), who aimed to understand the comparability of earnings reported under US GAAP and IFRS. These writers found that there are still large inconsistencies when comparing the accounting based disclosures of a firm, using two differing sets of standards. These inconsistencies add further complexity when attempting to determine the value relevance of accounting information. Barth et al. (2012:31) noted in their conclusions that the value relevance of earnings decreased for those US firms which were reporting figures based on IFRS, when compared to the same tests based on US GAAP figures. These writers' conclusions are in contrast with those of Lang et al. (2008:468) who found that the use of IFRS is associated with higher accounting quality, which one would anticipate to have a higher significance in the context of value relevance. The two contrasting views may arise from the market's reluctance to adopt the convergence of the two standard setting bodies.

The fact that an entity's economic performance results in differing accounting disclosures is of great importance when one considers the value relevance of accounting disclosures. If Barth et al. (2012) had not observed that the results differed between the two sets of financial statements mentioned above, then it would be assumed that the informational content across different disclosure methods was consistent. If this had been the case, then the standard setting and selection process would seem to be altogether irrelevant as the process would not have provided any additional or any less relevant information. It is because of the factors mentioned above that value relevance testing remains crucial, not only to demonstrate the overall informational content, but also to demonstrate the incremental informational content when standards are altered.

It is important to understand why different accounting standards exist and to what end they are trying to converge. Whilst many of the world's capital markets now require use of the IFRS, or some form thereof, for financial statements of public-interest entities, there are still several countries that have yet to adopt the convergence to IFRS. (PwC, 2010)

According to PwC the remaining major capital markets without an IFRS mandate are:

- The US, with no current plans to change.
- Japan, where voluntary adoption is allowed, but no mandatory transition date has been established.
- India, where regulatory authorities have made public statements about the intention to adopt from 2016-2017.
- China, which intends to converge fully at some undefined future date.

The IFRS was established in 2001 with the sole reason of encouraging global convergence of accounting standards (IFRS, 2015). The birth of the global convergence of accounting standards came in the wake

of numerous accounting based manipulations that caused users to become sceptical about the validity of the reporting process.

The IFRS Foundation states that its purpose is to develop a single set of high quality, understandable, enforceable and globally accepted financial reporting standards based upon clearly articulated principles (IFRS & IASB 2014). Initially, the primary goal was to seek convergence between the existing international accounting standards and other reporting standards such as the FASB's US GAAP. In support of this goal, the IASB was created to govern the accounting policy creation. The IASB is an independent accounting standard-setting board, overseen by a geographically and professionally diverse body of trustees, publicly accountable to a monitoring board of public capital market authorities (IFRS & IASB 2014). The overarching principle of the IFRS Foundation and the IASB is to set accounting standards that meet the following objectives:

- A thorough, open, participatory and transparent due process.
- Engagement with investors, regulators, business leaders and the global accountancy profession at every stage of the process.
- Collaborative efforts with the worldwide standard-setting community.

In the light of these objectives, one would expect to see the involvement of entities in the standard setting process and development as well as a willingness for convergence. The decision usefulness of information created by standards is taken up by the standard setters. The IASB's formulation of standards is not based on a research process, but has instead emerged through a consultative process over time (Coetsee, 2010). Whenever the current set standards do not provide guidance on how to account for a transaction or on how to report the financial position of a group of transactions, one would expect to see commentary from entities in which they request the addition of a new standard or an amendment to an existing one. Moreover, if a standard requires a disclosure that the preparers believe is counter to the economic reality, one would expect to find commentary requesting an update or exception to be included in that standard. Scott (2006) and Torfason (2014) discuss the involvement of entities in the standard setting process and both these writers agree that the IASB needs to take into consideration, more carefully, the concerns provided through commentary letters. The feedback process is crucial for maintaining the relevance of the accounting standards. The large number of comments made when exposure drafts are released from the IASB show clearly that the level of involvement by all parties in the reporting process is actually high. However, the IASB is often criticised for being too slow to act on such commentary. Again, value relevance orientated research can provide a quantitative method for establishing whether or not the standards, or changes to them, do in fact contain informational content.

It should be noted at this point that although the goal of convergence across geographical regions is a reasonable one, this does not necessarily imply that the standards applicable to each entity ought to be identical. Business practices do differ and not all of these follow the same economic principles. Because of this reality, there are industry specific standards that are not applicable across all entities. Convergence of standard setting would not call for the uniform reporting of entities across different sectors; instead, it would aim towards the uniform reporting of similar entities across differing geographic locations.

The implementation of a prescribed standard for recording transactions within an entity is often a straightforward process. In most instances the standards are designed in a way that allows for easy interpretation of how the recording ought to be done. The IASB's IFRS and IAS standards are released with explanatory appendices that include examples of common transactions and basis for conclusion notes that help the reporter make decisions during times of uncertainty. The current list of standards applying to differing types of entities reveals a fair level of agreement for recording and presenting a broad number of transactions even across GAAP and IFRS.

Although there seems to be agreement on a wide range of interpretations, there are instances in which there is no consensus on what is 'correct' (Scott 2006: 31). These instances are caused by a large array of events that can lead to differences in interpretation. Some common drivers of these inconsistencies include differing business practices, geographic location, tax laws, information costs, regulatory environments and management incentive schemes (Watts & Zimmerman 1978:122). These instances arise because the economic reality of a transaction may differ, depending on the business model of the entity. Whenever there is no specific standard or exception, two differing entities may be required to record and disclose transactions in an identical manner even though the underlying economic rationality of the transaction is different. If this is indeed the case then the accounting information would lose its usefulness and one would expect to see this reflected in value relevance testing.

One must keep in mind that the design of a standard ought to lead to transactions being recorded in a way that reflects their underlying economic substance. As there are various interpretations and prescriptions inside the standards, the question arises: what ability do firms have to argue for diverging from what has been stated as being the 'rule'? More simply put: how does a firm argue for amendments when its management does not agree with a standard and the way it prescribes their reporting of financial information? Perhaps even more important is the argument that a firm should not be required to report on something required in terms of a reporting standard if the firm believes that the information would be misleading, because of the nature of the constraints within the standard. The same would apply if the cost of collecting and compiling the information for the disclosure is high and the usefulness is believed to be low or misleading (Zhan et al. 2015:). If this were the case, then one might expect that value relevance research would support the indication of low informational content for the disclosure in contention.

Ultimately the standard setting process, and the existence of the standards as they are today, impacts the study of value relevance. It is important to understand why certain disclosures may have high or low levels of informational content that are driven purely by a particular standard. This paper accordingly takes into consideration instances where there are indications of low levels of informational content of disclosures, because of potential problems within the accounting standards themselves. Furthermore, the literature that addresses the issue of low levels of informational content will become the focus for the ultimate research question. This is because current research can guide future standards in a way that will improve the usefulness of all disclosures.

### *Existing value relevance research*

“Value relevance research measures the usefulness of accounting information from the perspective of equity investors.” (Beisland 2009:8) “Value relevance research examines the association between accounting amounts and equity market values” (Barth et al. 2001:95)

As discussed briefly above, the existence of value relevance research in the modern sense of the term can be traced back to papers written by Ball and Brown (1968) and Beaver (1968). These writers formulated empirical methods to test the significance of accounting based earnings announcements and disclosures, relative to the market value of a given firm’s equity. The research method was later developed, and built on, eventually forming a concept now termed value relevance. According to Barth, Beaver and Landsman (2001), value relevance is currently defined in the literature as the association between accounting amounts and security market values. Barth et al. (2000) found that the first study using the concept of “value relevance” to describe the association between accounting amounts and security market values, was in a publication by Amir, Harris and Venuti in 1993. Torfason (2014) notes that the research concept was further developed by Barth et al. (1998), Dechow et al. (1999) and again by Barth et al. (2001).

Francis and Schipper (1999:325) offer four underlying interpretations of what value relevance is and the significance of this method.

- 1) “Interpretation 1: financial statement information leads stock prices by capturing intrinsic share values toward which stock prices drift.”
- 2) “Interpretation 2: financial information is value relevant if it contains the variables used in a valuation model or assists in predicting those variables.”
- 3) “Interpretation 3: the statistical association measures whether investors actually use the information in question in setting prices, so value relevance would be measured by the ability of financial statement information to change the total mix of information in the marketplace.”
- 4) “Interpretation 4: a statistical association between accounting information and market values or returns, particularly over a long window, might mean only that the accounting information in question is correlated with information used by investors.”

Beisland (2009:9) argues that interpretation 4, as provided by Francis and Schipper (1999), is the one that best describes why empirical value relevance research is actually conducted. “Value relevance research does not focus on how accounting information is used in valuation. Instead, this line of research asks if accounting information is able, ex post, to explain variations in stock prices over time and/or between companies” (Beisland 2009). This is not to say that the accounting information is not used in valuing securities at all; rather, the concept of value relevance itself tests whether the market reacts to the information provided by disclosures of an accounting nature.

Consequently the next step in this literature review is to examine what forms of accounting disclosures display the relationship defined above.

### *The value relevance of the earnings or income statement figures*

“The majority of the value relevance literature is concerned with how accounting measures influence the change in the market value of equity, i.e., the stock return.” (Beisland 2009:12)

Beisland (2009), in common with many other researchers, states that from a historical perspective, earnings have been the focus of value relevance testing. Accounting based earnings were in fact the focus of the paper written by Ball and Brown in 1963. Although these writers performed an event study, rather than a value relevance study, the conclusions drawn from their results are relevant to the history of the method. The conclusions reached by Ball and Brown (1963) can be summarised as follows:

- 1) “Income is an informative number, capturing half or more of all the information about an individual company that becomes available during a year.”
- 2) “However, the annual income report is not a very timely medium, since most of its content (85%-90%) is captured before the earnings announcement date.”

Ball and Brown (1963) found that earnings announcements do not cause jumps in stock prices. In contrast, Beisland (2009) states: “...the study suggests a certain under-reaction in stock price movements at the time of the announcement. This under-reaction creates a post-earnings announcement drift that appears to be most pronounced in cases of negative income surprises.” To contextualise, the combination of the conclusions drawn by Ball and Brown, and interpretations of research performed after this study suggest that investors do not “react” to earnings announcements. Nevertheless, the information contained in those announcements does indeed influence the market values of a firm’s equity over a period of time rather than immediately. This perhaps explains why value relevance testing has moved away from events based testing to periodic based testing.

Beaver (1968) provides further evidence to the “earnings significance” debate. That writer noted a dramatic increase in the trade volume of stocks during the week of their earnings announcements. Beaver (1968) also noted that the degree of the stock price changes during the period leading up to and following an earnings announcement would be much larger than the average degree of stock price changes in periods when there were no earnings announcements. Beisland (2009) argues that “both [these] results suggest that earnings announcements lead to a change in the probability distribution of future returns for investors, and hence, the earnings report has information content.”

Beisland (2009) also notes that the value relevance of earnings is stereotypically studied by regressing the stock return on accounting earnings, as demonstrated by the Ball and Brown publication of 1963. Alternatively, the abnormal stock return on unexpected earnings is examined, as mentioned in the paper by Beaver in 1968.

A review was conducted of literature that is more recent than the publications of Ball and Brown (1968) and Beaver (1968). That review provided many instances where researchers found results that were inconsistent with those of the abovementioned, and somewhat fundamental, papers. One such instance was in a paper written by Lev (1989) who found low empirical results, based on the regression models used, between market value of equity and earnings figures.

Beisland (2009:15) lists many explanations, found in the literature, that account for the negative empirical results of certain researchers. In aggregate these explanations refer to inherent limitations in samples, models, data or statistical testing techniques. Amongst these explanations are the following: low earnings persistence as discussed by Dechow and Ge (2006); a lack of timeliness of earnings due to

strict requirements regarding objectivity and verifiability of accounting numbers as discussed by Collins et al. (1994); conservative accounting as discussed by Penman and Zhang (2002); misspecification of statistical models as discussed by Beaver et al. (1997); and; inadequately short measurement intervals for returns and earnings as discussed by Easton et al. (1992). Beisland (2009) lists several other explanations for inconsistencies between conclusions on the value relevance of earnings.

Of particular interest in the context of this paper is the notion that accounting based research often uses statistical tests that are not designed to handle the combination of cross sectional and time series style data. De Jager (2008) noted that accounting based researchers frequently compensate for the lack of time depth in their data series by collecting, also, data cross-sectional for different companies. Any failure to consider the appropriate factors that are inherent in this type of data may be another factor contributing to why results from different researchers are so inconsistent. Teets and Wasley (1996) also noted that there are instances in which firm-specific estimations should be used in preference to pooled data. They discussed the implications of correlation between firm-specific factors playing a role when estimating regression outputs. Their finding was that the mean firm-specific coefficients of some independent variables were 13 times larger than the equivalent coefficient estimated using a pooled cross-sectional regression. Beisland (2009) commented on the results of Teets and Wasley (1996) suggesting that “the difference is due to both variation in coefficients and unexpected [independent] variances and a negative relation between firm-specific unexpected [independent] variances and coefficients.” Teets and Wasley (1996) concluded by suggesting that the use of a pooled estimation may lead to incorrect readings about the size of estimated coefficients, which is consistent with the suggestions made by De Jager (2008). The statements cited above will inform this research of the potential statistical abnormalities when using panel data.

In a paper published by Easton and Harris (1991) the focus of the explanatory variables was on both earnings and change in earnings. These writers first ran single regressions for the two measures followed by a multivariate regression analysis. As is consistent with prior work of Ball and Brown (1968) and Beaver (1968), Easton and Harris (1991: 20) found both the earnings and the change in earnings relationships with respect to market values to be statistically significant. In the multivariate specification, the coefficient for earnings was significant across the entire time series tested whilst the coefficient for the change in earnings was significant for less than half of the time series observations. Beisland (2009) commented, in response to the work performed by Easton and Harris (1991), saying that the results suggest that both earnings levels and earnings changes play a role in stock valuation.

Marquardt and Wiedman (2004) attempted to review the impact of earnings management on value relevance significance levels with respect to well documented instances of manipulations based on accounting earnings. Regardless of whether these examples of earnings management were in the form of smoothing or big bath behaviour, Marquardt and Wiedman (2004:320) anticipated that this type of manipulative behaviour would impact on the validity of value relevance results. In their study, these writers focused on instances where the evidence of earnings manipulation came to light after the earnings release. They noted that one situation of particular interest was when a company was looking to or had already issued equity, given a certain level of equity holding amongst management. It was believed that if management owned equity, then this would be the most likely time that earnings manipulation would be present in the data. The results obtained by Marquardt and Wiedman (2004) were in line with expectations: they found that if management had been involved in equity issues (on the sell side), then discretionary accruals would be significantly positive in the year of the equity sale.



Importantly, Marquardt and Wiedman (2004) also found that when performing value relevance regressions on the above-mentioned set of data, the significance of the earnings coefficients decreased relative to sets of data where there was no management participation in equity offerings. Again, this finding highlights another potential problem for the validity of value relevance regressions. There are examples of similar results in the work performed by Christensen et al. (1999) and Bao and Bao (2004) that both address the impact of earnings management. Interestingly Bao and Bao (2004:1528) state that the use of income smoothing techniques by management may increase the value relevance significance of earnings by decreasing the volatility and thus standard error terms in the regression.

The literature, reviewed above, shows clearly that earnings based value relevance testing is well established. Against that background, this paper will attempt to examine the earnings based literature, in greater depth, to explore what further research has been done.

#### *A component approach to the value relevance of earnings information*

Beisland (2009) notes that a large body of research exists, that assumes that all earnings components have matching associations with stock returns. The following review of current literature, below, shows that Beisland's statement is not entirely true, as acknowledged by Beisland (2009) in the latter part of his paper.

Disclosure of earnings amounts has grown in detail over the last few decades. Along with the growth in detail, it has become possible to test the value relevance of portions/subsections of this disclosure. Ramakrishnan and Thomas (1998) were amongst the first researchers who began to test elements of earnings components beyond that of "net earnings." In their study, the focus was on more detailed disclosures such as permanent (ordinary) earnings, transitory earnings and price-irrelevant components of unexpected earnings. They found that each component, separately regressed, had different significance and coefficients. Permanent (ordinary) earnings were the most significant over longer time series of data. The findings of both Landsman et al. (2007) and Dhaliwal et al. (1999) suggest that extraordinary and special items are less value relevant than permanent (ordinary) earnings; these conclusions support those drawn by Ramakrishnan and Thomas (1998).

Beisland (2009) notes that because the value relevance of some GAAP earnings items is less significant, as noted in the papers cited above, analysts have increasingly started to focus on "street" earnings numbers. Thus: "Street earnings are pro-forma earnings numbers that typically exclude special items and non-cash items" (Beisland 2009:16). Pope (2005:347) noted that if earnings components can increase the precision of intrinsic value calculations then the bottom line disclosures will begin to become less relevant over time.

It would appear from the literature that earnings based value relevance, both at a bottom line level and component level, has been well-researched and documented. Whilst results have not always been consistent or significant, the need for performing value relevance research based on earnings is clear.

#### *The value relevance of the stock measurements or balance sheet figures*

"While much of the value relevance literature primarily focuses on flow measures, such as earnings and/or accrual measures, a large number of studies also show the value relevance of stock measures." (Beisland 2009:18)

Studies performed by Dechow and Ge (2006), Barth et al. (1998) and Collins et al. (1997) all find evidence of high levels of value relevance for the book value of equity. In many instances, researchers

have also observed a higher association between market value of equity and book value of equity, rather than earnings and stock based returns. It is interesting to note that this is particularly clear in financial institutions, as shown in the three studies cited above. However, Beisland (2009) noted that the value relevance of stock measures such as book value of equity, and other balance sheet ratios, are more sensitive to market valuation principles such as leverage and solvency: again, these observations are more apparent in financial institutions than in others.

Recent accounting developments have been moving to greater levels of fair value disclosure as opposed to “historic cost” disclosure and this trend applies both to the GAAP and IFRS standards. Against this background, researchers have observed an improvement in the value relevance of stock measures and this is seen in the work by Barth et al. (1996) and Khurana and Kim (2003). According to Barth et al. (1996:3), these disclosures have particularly impacted on the value relevance of book value of equity for banks. Interestingly, Khurana and Kim (2003) also found that for certain smaller banks that are merely holding companies, historic figures appear to be more value relevant than those measured at fair value. Whilst fair value accounting is under continuous reform, it would appear that changes made to standards governing the calculation of fair value have indeed proved to be incrementally value relevant. This finding is important to note within the context of this paper, because the ultimate research question will seek to identify where there are areas of little or no informational content in the given context of cash flow disclosures.

Beisland (2009) notes that the increase in the value relevance of stock measures, attributable to an improvement in fair value disclosure, is accompanied by a decrease in the relative value relevance of earnings from a regression stand point. Intuitively, this would make sense as fair value accounting seeks to obtain values for balance sheet items in a way similar to discounting future expected returns (earnings) from a particular asset. Thus, fair value accounting seeks to do what market participants would have otherwise done themselves. Rendering earnings disclosures less informative. Beisland (2009) also notes a possible further implication concerning an increase in the use of fair value accounting; thus, it could contribute to a higher level of volatility in earnings attributable to once-off fair value gains or losses that form part of the earnings figures. This observation would be consistent with those mentioned earlier under the review of the reasons behind the need for component based earnings value relevance. This summation is supported by Danbolt and Rees (2008) who state that whenever a user of financial statements is provided with fair value disclosure on balance sheet numbers, then the fair value income based earnings become unimportant; this is because the assets and liabilities of the entity are already stated at an approximated market value. In reality, fair value accounting and market values are not one and the same; however, their correlation is much higher than the historic cost bases.

Barth et al. (1998) found that if there are indications of financial distress in a firm, then the book value of equity becomes increasingly value relevant. Although one can appreciate that in the case of a firm under financial distress, the book value of equity becomes increasingly important, Barth et al. (1998) linked their own conclusion to evidence indicating that earnings based value relevance became less important in this instance too. One can presume that this was because the liquidation value of an entity would be closer to the balance sheet numbers than the earnings figures.

Barth et al. (1998) concluded by stating that the balance sheet and income statement provide different sources of information and that ignoring either the one or the other in a value relevance exercise will potentially lead to model misspecification. This conclusion is supported by Dechow et al. (1999) in their

assessment of stock measures and earnings measures of value relevance. Interestingly, Ohlson and Penman (1992) found that the components of earnings provided a greater level of value relevance but the components of the balance sheet did not.

The literature seems to indicate that stock based measures (balance sheet items) have also been well-researched and documented within the context of value relevance testing. Moreover, the evidence is supportive of these notions over financial institutions as well as firms from other business practices. The literature suggests that in recent decades, fair value accounting has come to play a major role in the increase in value relevance of balance sheet items. Whilst it would appear that the incremental relevance over and above earnings is dependent on firm-specific factors, it is clear that the balance sheet cannot be ignored altogether.

### *The value relevance of Cash Flow items.*

“The majority of value relevance research focuses on the value relevance of earnings... However, as the ultimate return of every investment is the cash flow generated by the investment, the value relevance of cash flows is often used as a benchmark for assessing the usefulness of accounting values for stock investors.” (Beisland 2009:16)

As shown above, there is a large amount of literature covering earnings and stock based measures with respect to value relevance research. It is interesting, for the purpose of this paper, to note that there is an apparent lack of value relevance research oriented towards cash flow disclosure. This section of the literature review will now refer to reported research that either contains, or focuses on, cash flow elements inside value relevance regressions.

The accrual system of accounting attempts to record the underlying economic substance of a given transaction – the cash flow accounting of a transaction is often vastly different from the economic substance. Because of this, both the GAAP and IFRS require the forms of recording the cash flows as well as the accrual based transactions to be disclosed. Both the FASB and IASB are of the opinion that accounting for transactions under the accrual system causes earnings to become more highly associated with future cash flow and company value than does current cash flow. This assertion has been studied in value relevance research, but not to the extent of earnings and stock based measures (Beisland 2009:17).

Earnings as disclosed can be calculated using the change in accruals and the overall cash flow of operations as described by Rayburn (1986). However, in practice, cash flows are often derived from the other direction. Rayburn (1986) investigated the value relevance of cash flow and accruals independently of one another and found that both disclosures do, indeed, have significant associations with stock returns. However the results of that study showed that of the accrual elements, the working capital elements dominated. This finding would lead readers to assume that operating cash flows are more value relevant than investing and financing cash flow elements. Understandably, operating cash flows are closer to what can be anticipated as free cash flow to shareholders, which is the common metric used for the valuation of stocks.

Beisland (2009) notes that the results of Rayburn (1986) are consistent with the notion that current accruals have information content, while long-term accruals do not; the latter will all eventually fall into the income statement, and thus earnings. Bath et al. (2005) confirmed the conclusions reached by Rayburn (1986) using data from a different time series. Dechow (1994) found that whilst realised cash flows are significant, earnings are more strongly associated with stock returns; as the time series of

data is extended, these results become even more compelling. Dhaliwal et al. (1999) reached a similar conclusion to those reached by Dechow (1994) and Rayburn (1986); thus, cash flow elements, given the correct circumstances are, in fact value relevant and would thus have informational content. Bath et al. (2005) and Ball & Shivakumar (2006) all report that accruals items are not only significantly predictive of future cash flow but also significantly related to stock returns in their sample selection. The findings made by Bath et al. (2005) and Ball and Shivakumar (2005) are also consistent when differing types of accruals are tested. These findings again confirm the importance of short-term accruals over longer-term accruals and consequently cash flows linked to the operational side of an entity.

All of the literature mentioned above has indicated that there is informational content in cash flows by virtue of accrual testing. Nevertheless, this literature all still confirms that earnings contain more informational content when regressed against market values. Beisland (2009:17) makes the comment that realised cash flow is less able to reflect a firm's performance because of severe timing and matching problems. In the event of a firm having longer operating cycles, the earnings association becomes even stronger than that of the cash flow, as evidenced by Collins et al. (1997), who cite just one example of a timing issue. At this point it is important to note what types of business models would lend themselves to having significant cash flow relevance attributable to the length of the inherent operating cycle. For example, small and medium retailers, who sell goods and services mainly for cash, would be expected to have very short operating cycles. One would anticipate that operating cash disclosures would reflect figures closely linked to those of earnings based disclosures. This would ultimately result in high informational content in the case of both cash flow and earnings based disclosures. In contrast, banks and financial institutions have very long operating cycles; they often lend out cash for periods greater than several years. Although accruing interest on these amounts would impact the earnings disclosures, the realisation of these earnings into cash is often lagged. The assumption would then be that banks have far less informational content in cash flow disclosures because of the longer-term nature of the operating cycle. Beisland (2009:17) also notes that the persistence of earnings relative to cash flow is a matter of which cash flow measure is used; this observation will be discussed further in this paper.

From the review of the papers mentioned above, where the focus has been testing of cash flow elements, it becomes apparent that it is vital to segregate cash flows into the operating, investing and financing elements. This finding is consistent with the notions put forward by Ball and Shivakumar (2005), Bath et al. (2005) and Rayburn (1986), who all agree that not all cash flow items display significance. Overall, the body of literature seems to indicate an understanding that cash flow elements, particularly operating cash flows, with respect to accruals, do hold informational content and would thus be value relevant. This would lead the standard setters and users to interpret the cash flow disclosures as being of importance in the valuation of a firm only in certain instances. In order to explore, further, the concept of value relevance of cash flow disclosures it is important to describe, in detail, what the accounting standards require in terms of disclosures in the cash flow context.

#### *Understanding Cash Flow disclosures as required by IAS 7*

Any entity choosing, or being required by law, to report its financial statements under the IASB's IFRS must include five disclosure elements. This requirement is set out in IAS 1 – 'Presentation of the financial statements'.

A complete set of financial statements must comprise:

- a statement of the financial position as at the end of the period;
- a statement of profit and loss and other comprehensive income for the period;
- a statement of changes in equity for the period;
- a statement of cash flows for the period; and,
- notes, comprising a summary of significant accounting policies and other explanatory information.

The standard which governs cash flow disclosure now needs to be elaborated on, in order to clarify the focus of this paper. Thus, the “IAS 7 Statement of cash flows” is the IFRS standard that governs the compilation and presentation of the cash flow for an entity during the period under review; the equivalent standard under GAAP is FAS 95. The objective of the IAS 7 standard is to require the presentation of information about the historical changes in cash and cash equivalents of an entity; this must be done by means of a statement of cash flows, which classifies cash flows during the period according to operating, investing, and financing activities (IFRS, 2015).

The cash flow statement should show where money is generated, raised or utilised (operations, financing or investment) and should also reveal potential liquidity problems (Kam 1990).

Operating activities are the principal revenue-producing activities of the entity but this term also includes other activities that are not investing or financing activities. Cash flows from operating activities are primarily derived from the principal revenue-producing activities of the entity. Therefore, they generally result from the transactions and other events that enter into the determination of earnings. The amount of the cash flow arising from operating activities is a key indicator of the extent to which the operations of the entity have generated sufficient cash flows to repay loans, maintain the operating capability of the entity, pay dividends and make new investments, all without recourse to external sources of financing. (IFRS, 2015)

An entity must present its cash flows from operations in one of two ways: either the direct or indirect method. Under the direct method, cash received from customers and cash paid to employees and suppliers are disclosed alongside changes in working capital balances: this approach is termed the unwinding of the accrual method of accounting mentioned by Rayburn (1986). The overall impact shows the net effect of cash inflows or outflows arising from operating activities. Alternatively, an entity has the option to present its operating cash flows under the indirect method; here, the profit or loss figure is adjusted for noncash items and items that would fall under investing and financing elements. Ultimately the same net operating cash flow figure would be disclosed.

The term ‘investing activities’ covers the acquisition and disposal of long-term assets and other investments not included in cash equivalents. The separate disclosure of cash flows arising from investing activities is important because those cash flows represent the extent to which expenditures have been made for resources which are intended to generate future income and cash flows. The aggregate cash flows arising from obtaining and losing control of subsidiaries or other businesses shall, in terms of IAS 7, be presented separately and classified as investing activities. (IFRS, 2015)

The term ‘financing activities’ covers those activities that result in changes in the size and composition of the contributed equity and borrowings of the entity. The separate disclosure of cash flows arising from financing activities is important because this information is useful for predicting claims on future cash flows by providers of capital to the entity. In terms of IAS 7, an entity shall report separately major

classes of gross cash receipts and gross cash payments arising from investing and financing activities. (IFRS, 2015)

Fundamentally, IAS 7 seeks to undo some of the concerns raised in relation to the accrual mechanism that is used in the accounting profession. The cash flows statement shows the movement of the cash amounts for the entity in a given period irrespective of the underlying economic reality attached to this cash. This information is useful for the users of the financial statements for a number of reasons including the assessment of the liquidity and solvency of an entity. The accrual system of accounting attempts to record the underlying economic substance of a given transaction: it should be borne in mind that the cash flow accounting of a given transaction is often vastly different from its economic substance. Because of this reality, both GAAP and IFRS require both forms of recording to be disclosed.

IAS 7 states that banks and financial institutions, like any other firms, need cash to conduct their operations. Banks are therefore required to prepare the statement of cash flow like any other firm (Torfason 2014).

Information about a reporting entity's cash flows during a given period also helps users to assess the entity's ability to generate future net cash inflows. It indicates how the reporting entity obtains and spends cash; this includes information about its borrowing and repayment of debt, cash dividends or other cash distributions to investors, and other factors that may affect the entity's liquidity or solvency. Information about cash flows helps users to understand a reporting entity's operations, evaluate its financing and investing activities, assess its liquidity or solvency and interpret other information about financial performance (Torfason 2014:64).

Overall, IAS 7 and its GAAP counterpart FAS 95, would appear to provide useful information to investors, as discussed above. However, the literature surrounding value relevance notes that cash flows, as currently disclosed, do not appear to be as significantly relevant as earnings or balance sheet figures; this view was noted by Dechow (1994), Rayburn (1986), Dhaliwal et al. (1999), Barth et al. (2005). Also, cash flows, as currently disclosed, appear to be even less significant for financial firms although this particular distinction is less apparent in the current literature.

Zhan et al. (2015:20) argue that the banks' cash flows are different in nature from those of non-financial companies. This argument is also made by Scott (2006), Torfason (2014) and Mulford and Comiskey (2009). A bank's cash is similar in nature to manufactured goods in industrial companies and therefore, the cash flows of banks contains limited information and less informative than those of non-financial companies (Zhan et al. 2015). The focus of the paper written by Zhan et al. (2015) was on a comparison of the value relevance of cash flow items between financial and non-financial firms in the US. These writers noted that literature has paid little attention to the informativeness of banks' cash flows, to which this paper would agree. Barth et al. (1991) and Ryan et al. (2006) mention the potential issue of cash flow accounting inside financial firms when evaluating the value relevance of different items. The review of the different economic reality of cash flows in financial and non-financial firms is very well established in the literature, having being discussed by Scott (2006), Torfason (2014), Mulford and Comiskey (2009) and Barth et al. (1996) amongst others. However, it would appear from the literature that Zhan et al. (2015) have provided the only research that directly contrasts the value relevance of cash flow disclosures in financial and non-financial firms; their aim was to attempt to prove that cash flows are less relevant in financial firms than in non-financial firms.

For the purpose of this paper it is essential to note the concept that cash flow disclosures in banks and financial firms appear to have less informational content than in non-financial firms. Moreover, it should be noted that this concept has not yet been widely researched. An understanding of why cash flow disclosures of financial firms appear to have less informational content is required to guide any research on the matter.

### *How are bank's cash flows different from non-financial firms?*

Torfason (2014:2) noted that the business of a simple bank can be defined as providing credit. In very simple terms, banks receive deposits (cash inflows) which are treated as liabilities and then provide loans (cash outflows) which are treated as assets. Generally, much of a bank's time is spent trying to match the deposits and loans on its balance sheet; if this matching is done with some level of success then the net cash flows are very small relative to the size of the balance sheet. Furthermore, whenever a bank has accepted as much in deposits as it has provided in loans, then that bank is considered, as per accounting standards, to be solvent (Torfason 2014). Thus it would seem that banks provide an intermediary function whereby they receive cash then and give it out to other parties, with this being their main function. By extending this basic business model to include reserve ratios it becomes apparent that banks actually facilitate money creation. Although from a cash flow standpoint, a cash outflow in one business is always almost matched entirely by a cash inflow in another. It must be noted that this model does not always necessarily operate in the sequence explained above, because of some portion of equity. A bank's ability to manage the risks involved on either side of its balance sheet is the factor that enables that bank to make profits. In an example, a bank would lend out cash charging a higher interest rate than it would pay on the deposit it has received. In short, banks create liquidity and transform risk. (Berger & Bouwman 2009:3779)

In the simple example illustrated above, there are hardly any net cash flows during the initial set-up of the client base, the matching of deposits and equity funding. The loans given out result in "cash flows," as defined by current accounting standards, that mostly net off. The bank's funding is predominately made up of a combination of equity and deposits received from customers. The matching of deposits with loans makes a bank's statement of cash flows more complicated than those of other firms and also makes the measurement of liquidity difficult. The separation between the customers' flow through the bank and the bank's own flow is often unclear. Cash flow generated from operations of another cash flow is problematic to define, as netting is an issue and the unit of measurement is the same as the object being measured (Torfason 2014:3).

Banks are required to report on cash flows, as defined above, and the reporting statement must be divided into operational activities, financing activities or investment activities; this requirement also applies to all other firms. Mulford and Comiskey (2009) discuss several key factors that influence a bank's ability to report cash flows in accordance with these three classifications. In a study performed on several major US commercial banks Mulford and Comiskey (2009) concluded that those banks are generally consistent in their classifications of cash flows from operating, investing and financing activities. However, the significant and frequent effects of non-cash transfers and the cash flow impacts of acquisitions cloud the usefulness of the statement of cash flows. This position is in line with the one put forward by Zhan et al. (2015).

These "non-cash transfers" include items that would effectively shift the classification of the sale of particular assets to another category that differs from the classification on the purchase date. To illustrate this point, Mulford and Comiskey (2009) discuss the issue surrounding a loan or financial

instrument that is purchased with the intent of later negotiating a sale: on the purchase date the loan or financial instrument amount would be reported as operating cash outflow in line with the description of operating activities as prescribed by the standard. However, Mulford and Comiskey (2009), state that the amount of discretion given upon classification is not always clear. That is to say, it is difficult to understand fully the intention of the purchase and in this situation it is not necessarily clear what the classification should be. Mulford and Comiskey (2009) then note that even when a financial instrument has been purchased under the intention of a certain classification, be it operating or otherwise, a change in that initial intention would call for an accounting entry that has no cash flow consequence. Thus, the subsequent sale of the instrument would result in a cash inflow being disclosed under a different classification differing from the one applied when the outflow was disclosed on purchase. As these transfers are not always adequately disclosed it would be difficult for the users of the statements to understand fully what cash flows have taken place across the three different classifications. Mulford and Comiskey (2009:5) note this is one potential issue, among many, that detract from the usefulness of cash flow disclosures from banks. The problem stated by these writers is not as apparent in non-financial firms because their intentions during purchasing and sales are normally clearer.

Mulford and Comiskey (2009:8) point out that in view of the nature of the banking cash flow systems, the classification of certain purchases or sales of assets or liabilities may be misleading to the reader of the disclosures. This would ultimately impact the overall disclosure of operating cash flow levels, which as discussed, has proven to be value relevant. Again this provides further a reason to test whether or not investors are actually using these disclosures to inform their asset allocations; this point is mentioned by Zhan et al. (2015) and Torfason (2014).

Cash flow accounting in financial institutions is not as straightforward and easy to understand as in the non-financial firms. It has been argued that the blame resides in the fact that current standards, and their disclosure requirements, are not designed in a way that is relevant or useful for financial firms. If this is true, then we would expect to see differing levels of value relevance for cash flow disclosures in financial and non-financial firms.

### *Concluding remarks*

It is apparent from a study of the current literature that value relevance testing has changed over time. The design of that testing has developed and continues to do so. The conclusions drawn from prior research are supported by empirical evidence that suggests that accounting disclosures play a key role in how investors value equity stakes of a firm.

Amongst the most prevalent accounting disclosures are earnings amounts, balance sheet figures (such as book values of equity) and cash flows from operations. Although most of the testing has been done across markets over different time periods, there are instances where researchers have focused on a particular industry. Here, conclusions are drawn as to why some disclosures are more value relevant than others. Another interesting point to consider is how the value relevance of balance sheet items appears to have increased as the quality of financial reporting standards has allowed for the balance sheet to move closer to market values.

There is, however, an apparent gap which lacks focus. Given the difficulties of cash flow reporting in financial firms and given the reluctance of financial firms to compile cash flow statements, one would expect to see a greater focus on the relative value relevance of cash flow disclosures for financial firms.



Another interesting consideration that arises from the existing literature is the very small base of current research that has focused on value relevance testing in developing countries.

In light of the above findings, this paper will seek empirically to investigate whether or not cash flow disclosures for a sample of financial firms are any less value relevant than for a comparable sample of non-financial firms. The sample will be drawn from South African firms, as this economy is seen as a developing country, where there is currently very little value relevance literature, with a reputation for having a high standard of financial reporting. South Africa provides the opportunity to test value relevance concepts with less uncertainty over the validity of the information provided in the observational accounting and market data. The South African banks are also well known for their disclosure quality and as such, provide an ideal sample from which to test the considerations described above.

### *3. Hypotheses Statements*

In view of the findings presented in the literature review, above, this paper will now seek to test the hypotheses given below.

- 1) The first hypothesis to be tested considers whether or not the explanatory power of earnings, book values of equity or both are significant both for the banks and non-financial firms in the sample, over a given period.

$H_0$  : Both earnings and book value of equity disclosures are value relevant with respect to market values of equity.

$H_1$  : Both earnings and book value of equity disclosures are not value relevant with respect to the market value of equity.

- 2) Given the above tests, the research will choose to include a cash flow from operations disclosure component. In any given linear or multi regression model, adding more variables should increase the strength of the model. Whilst this observation will be tested it will not be the focus of the testing. Rather, the corresponding value relevance attached to the cash flow component will display whether or not the disclosure is actually value relevant or not. This exercise will again be performed both for banks and non-financial firms in the sample, to provide a benchmark.

$H_0$  : The cash flow from operations disclosure is value relevant, both for banks and non-financial firms.

$H_1$  : The cash flow from operations disclosure is value relevant for non-financial firms, but not for financial firms.

The latter hypothesis is drawn from the discussion held in the literature review, on the issue of the inherent problems in cash flow accounting for financial firms. It is anticipated that the cash flow from operations is value relevant for non-financial firms as this position is consistent with prior research. In contrast, it is anticipated that the same measure is not value relevant for financial firms for the reasons explored above.

#### *4. Data and Method*

The data collection and method described in this paper will follow closely those used by Zhan et al. (2015). These writers aimed to test the value relevance of cash flow items beyond that of earnings disclosures and book values of equity for both financial (banks) and non-financial firms in a sample taken from US listed entities.

This paper will retest these parameters for firms listed in South Africa on the Johannesburg Stock Exchange (JSE). This will be done using methods similar to those used by Zhan et al. (2015) but wherever this paper deviates from those writers' methods, an explanation for such deviation will be given.

##### *Data*

All the financial statement data, used in this paper, were retrieved from the I-Net BFA terminal, which was accessed at the University of Cape Town library. This applied to the banks as well as to the non-financial firms in the sample. The sample data were taken from the interval 2003 to 2015. The standardised format of financial statements provided by the I-Net BFA terminal was selected as a starting point. The line items needed from the financial statements were then taken from the financial statements with no further adjustments being made to the numerical data other than the scaling techniques as well as the removal of some observations; this is described later in the paper. The starting point of the data collection was chosen to be 2003 as this was the year when the current form of IAS 7 first became mandatory for all JSE listed firms.

Whenever a firm had made a net loss, in a particular year, as disclosed under the profit attributable to ordinary shareholders, this observation was removed. The reasons for this are discussed below in the analysis section.

All the data relating to market capitalisation were also taken from the I-Net BFA terminal, which again was accessed at the University of Cape Town library. The market capitalisation of a given firm was taken three months after the financial year end stipulated for the corresponding set of financial results. This time lag between the date of recording the market capitalisation and the date of the financial year end arises because of the regulated time period in which financial statements are required to be published after the financial year end. This is consistent with the view that value relevance testing should be done as a period based model rather than as an event based model, as discussed in the findings of the literature survey, reviewed above. All the sample data are scaled by market capitalisation from the start of the financial reporting period for each observation.

##### *Bank Data.*

Because of the small number of listed banks on the Johannesburg Stock Exchange (JSE) and the period of time for which IAS 7 has been in place, the number of observations pertaining to bank financial year ends is very limited. The total number of observations, over the 13 years, for seven banks, is 87 year end cases. There were a few instances where a firm's data were not available for all 13 years. (See Appendix Tables 1 A & B for the full descriptive statistics)

### *Non-financial firm Data.*

A number of considerations were taken into account when selecting the sample data of non-financial firms, to compare against the banks. Thus, all the firms selected were in the top 100 firms as listed by market capitalisation; this was to ensure that no thin trading or liquidity constraints would exist with respect to their stock values. These considerations are also appropriate for all financial firm data. In the selection process, a focus was placed on those areas where the literature had found cash flow items to be most relevant; these were general retail and consumer industry sector firms. Industrial and resource firms were not included in the sample. In an attempt to match the sample size with the one generated for the banking sample data, eight firms were selected, giving a total number of observations of 97, again there were a few instances where a firm's data was not available for all 13 years. See table 1 below for the comparative indicators across the two samples. (Also see Appendix Tables 1 A & B for the full descriptive statistics)

Table 1

Period: 2003 - 2015	Financial Firms	Non-Financial Firms
Average Market Capitalisation (size) (R'millions)	R72,941	R 62,596
Average Earnings (R'millions)	R 6,212	R 3,312
Average Cash Flow from Operations (R'millions)	R 4,983	R 2,354
Average Price to Earnings Multiple	14.54	27.03
Average Dividend Yield	3.52%	2.65%
Average Book value of Equity to Market Capitalisation	3.18	5.47

### *Variables from data*

#### *Definitions.*

In order to test the value relevance of line items contained in the financial statements, the first step must be to establish the common definitions for those items under review. Those definitions will assist in the outline of the regression models to follow.

- 1) Earnings of a given firm, in a given period, are defined as the amount given from the standardised data<sup>1</sup> set named "Profit Attributable to Ordinary Shareholders." In previous studies performed by Barth et al. (2000), Ryan et al. (2006) and more recently Zhan et al. (2015) the earnings figures used were before extraordinary items. However in papers written by Beaver (1968), Ball and Brown (1968) and Marquardt and Wiedman (2004), amongst many others, there is no mention of separating out extraordinary items. It would seem logical that if one were testing earnings based disclosures, then the informational content would need to include any extraordinary items when analysing the movements in stock values. Even if these items were a once-off occurrence, one would expect the market value of a firm to be influenced by them if they were significant enough. Hence, for the purposes of this paper the full earnings attributable to ordinary shareholders is used as the informational relevant figure. In the regression models to follow, profit attributable to ordinary shareholders will be denoted as "Earnings." This is referenced on the I-Net BFA terminal by the code: STD:IS87.

---

<sup>1</sup> As explained in the Data section of this paper.

- 2) The book value of equity for a given firm, at a given year end, is defined as the amount given from the standardised data set named “Ordinary Shareholders Equity at End of Year.” The use of the book value of equity attributable to ordinary shareholders, thus excluding non-controlling interest and other items, is consistent with the research method used by most, if not all, prior research. Zhan et al. (2015) point out that more often than not, this is the most significant part of the total book value of equity and is directly related to market values of stocks; this is shown in prior research performed by Fairfield et al. (2002), Collins et al. (1997), Dechow et al. (1999) and Barth et al. (1991). In view of this, this paper will follow a consistent measure of book value of equity as the prior literature has established. For the purpose of defining the regression models followed later the disclosure “book value of equity” will be abbreviated to “BVE”. This is referenced on the I-Net BFA terminal by the code: STD:SFP06.

In the paper written by Zhan et al. (2015), much deliberation was given to using cash flow items as disclosed or unwinding the accrual system from earnings (as previously discussed in the literature review portion of this paper) to the resultant cash flow components as has been done previously by Barth et al. (1998) and Fairfield et al. (2002). In this paper, the approach of taking the disclosed items straight from the data set is used as the accuracy of the cash flow disclosure is not under review.

- 3) Cash flow from operations for a given firm, for a given period, is defined as the amount given from the standardised data set named “Cash from Operating Activities.” The cash flow from operations will be abbreviated to “CFO” for the purposes of the regression models to follow. This is referenced on the I-Net BFA terminal by the code: PUB:CFS33

It is understood that the distinction between the operating, investing and financing categories of the banks' statements of cash flow items is arbitrary, as discussed by Zhan et al. (2015), Ryan et al. (2006) and, Mulford and Comiskey (2009). However, this paper is not designed to test the accuracy of cash flow accounting but rather the relevancy of the numbers as disclosed in the statements. The potential for this issue to disrupt the value relevance of a financial firm's cash flow is an intended consequence in relation to the research question itself. One would expect to see less statistically significant results for the cash flow disclosures due to the arbitrary nature of the distinctions between the different types of cash flows.

All of the three definitions of terms, provided above, are consistent with the literature where appropriate. Earnings, book values of equity and cash flows from operations will be considered to be independent variables.

#### *Dependent variable.*

- 1) The dependent variable in the regressions to follow will be the total market capitalisation of the respective firm, abbreviated as “MVE”. No adjustments will be made to the market value as obtained for equity based distributions to which a firm has committed; this follows the approach of Zhan et al. (2015). Such adjustments are difficult to justify in view of the nature of the anticipated timing of the given distributions and the direct impact that they have on the market capitalisation of a firm. Therefore, in order to reduce the complexity and potential for error involved in accounting for potential distributions, these will not be adjusted for in the data. The total market capitalisation of a given firm is referenced on the I-Net BFA terminal by the code: SOURCE48133:EQU

## *Method*

The test for value relevance is performed by regressing market capitalisation (MVE) for the sample of firms against the three independent components defined above. As a base line, the value relevance of a particular regression, as a whole, is expressed by the  $R^2$  of a simple or multiple regression model. The theoretical framework from which most value relevance testing has developed was founded in the residual linear information model developed by Ohlson (1995). The resultant  $R^2$  of the given model displays the coefficient of determination, or the coefficient of multiple determination for a multiple regression. From the outset it is acknowledged that correlation is not causality but this discussion is out of the scope of this paper.

Simply put, this regression model seeks to explain movements in the independent variable by expressing the dependent variable(s) as an input equation. The closer the  $R^2$  is to 1 the more accurate the relationship is between the independent and dependent variables, as depicted by the regression model.

Gu (2007) found  $R^2$  to be incomparable across samples; therefore, any comparison of the  $R^2$  of the output models across the two sets of sample data would be a flawed approach. Accordingly this paper will not compare the  $R^2$  results across the two samples but will only look to base line the explanatory power of each model in its own right. Comparisons across the two sets of data and resultant models will be drawn from the significance of the t-statistics attached to each dependent variable in the given output models. The focus will be on the differing significance of the cash flow from operations variable, book value of equity variable and the earnings variable; therefore, the interpretation of the results will focus on this issue. The assessment of the individual regressions  $R^2$  statistic scores will be used purely as a reasonability check to establish whether or not the regression as a whole is valid.

The form of regression described above relies on a set of assumptions which were outlined by Van den Honert (1999). The first assumption is that the data set from which the regression is drawn results in actual residuals that follow a normal distribution. If there is a non-normal distribution of the residuals, then heteroskedasticity arises. This is controlled for by scaling the observations. The method chosen for scaling will be discussed in greater detail below.

The second assumption concerning this type of regression is that the relationship between variables is linear. Prior research would suggest that this applies when regressing variables such as earnings, book value of equity and operational cash flow. Nevertheless, current literature holds conflicting views. There is support found for the linearity of these three variables in the work performed by Gu (2007:1075), who noted that only minor nonlinear scale effects exist. The impact of this finding is discussed below in the model formation section.

Because of the nature of the observations obtained, as discussed above, the data represents both a cross sectional and time series (period) analysis. The cross sectional analysis results in the coefficients described below, for each multiple regression model. Combining this cross sectional data with the time series standard error allows for the construct of t-statistics. These t-statistics provide evidence of whether or not the coefficients are statistically significant in relation to the regression output. This result will be of importance for this paper as it evaluates the probability of each given independent variable within the regression being statistically significant or not.

The use of a time series set of data makes the results vulnerable to autocorrelation. In other words, the residuals produced during the regression modelling are correlated through the influence of time specific factors rather than by the inherent assumptions provided by the hypothesis. A previous time series analysis performed on South African market data displayed positive autocorrelation (Weldegabir 2004). Autocorrelation is typically measured using the Durbin-Watson test in which a score of  $D=2$  represents no autocorrelation, a score  $D<2$  represents positive autocorrelation and a score  $D>2$  represents negative autocorrelation. This potential issue in the time series data is corrected by using a generalised least squares approach. That approach follows the one of Collins et al. (1997) who used it to control for autocorrelation in South African market data. Against this background, a Durbin-Watson test will be run for both sets of data on the base line model explained below, to assess the potential for autocorrelation. If autocorrelation is found to be prevalent in the base models then a dummy variable will be used to reduce the impact of any inherent autocorrelation.

The modelling described below will follow the value relevance testing under the price model as described by Barth et al. (2000). The price model attempts to use market values, earnings figures, book values and other static observations in the search for value relevant significance. An alternative to this would be to use the return model. The return model bases the data set on relative movements, denoted in percentage changes, of the dependent and independent variables. The return model is generally overlooked because of the problems of recognition lags and transitory earnings as discussed by Ryan and Zarowin (2003). The price model is however exposed to econometric problems such as omitted variable, scale and heteroskedasticity as noted by Weldegabir (2004) and Kothari and Zimmerman (1995). Weldegabir (2004) explained that omitting these variables will impact on the explanatory power of the given value relevance model. The assumptions made by researchers who select the price model are that the omitted variables are uncorrelated with the independent variable and that the corresponding coefficients are not biased towards the independent variable Kothari (2001:144).

The use of the price model for value relevance is in harmony with the linear information model as proposed by Ohlson (1995), which was discussed above, and will therefore be the method that this paper will follow.

### *Scaling of observations*

Barth and Clinch (2009) investigated the effectiveness at mitigating scale effects of six specifications of regressions of equity market value on equity book value and earnings. The purpose of their research was to gain a better understanding of how researchers can mitigate the potential for incorrect inferences, in accounting research based on capital markets, associated with size differences across firms. These writers' research is particularly relevant for this paper in view of the large size differences across the sample data observations which would potentially lead to scaling issues. Barth and Clinch (2009) based their study on the model proposed by Ohlson (1995) and this paper attempts to follow a similar approach.

The basis for the study by Barth and Clinch (2009) was to run data through statistical testing methods that were designed to identify scale effects. These writers used simulated data that had no scale effects present as well as simulated data that reflected the five scale effects focused on in their study. A key finding was that most of the diagnostics indicate that scale effects exist when they actually do not.

Another finding was that although the White (1980) test generally was effective at identifying heteroscedasticity, it was influenced by non-scale related features of the simulated data.

In brief; Barth and Clinch (2009) found that if simulated data with scale effects is modelled, then the most appropriate scaling factor is the market value of the equity of the given firm rather than other potential scaling factors. In view of this finding, this paper will scale all observations by the market value of equity at the start of the period for the relevant observation; this represents an attempt to mitigate scale effects that may potentially cause the incorrect inferences to be made about the results of the regressions.

#### *Limitations of the Linear Information Model*

Weldegabir (2004:40) noted that there are several limitations in using the linear information model as developed by Ohlson (1995). Some of those limitations are as follows:

- The model assumes that the partial equilibrium accounting systems must be taken to be correct as and when the figures are reported. As the world is keenly aware that accounting systems are actually far from perfect, this assumption is an inherent limitation. Beaver (2002) recognises this fact, but maintains that the model has still provided a solid grounding for empirical accounting research.
- There are several simplifying assumptions attributed to the way the market interprets accounting information. One of these almost regards the choices to be made in the capital markets as being binary. The model also assumes that over a period of time, instances of abnormal earnings form part of normal earnings when one considers a time series of data. Barth et al. (2000) note that this may be difficult to interpret when using time series data of inconsistent lengths.
- Again, the model is found to lack the ability to consider risk-return trade-off by market participants. Fairfield et al. (2002) argues however that it would be impossible for any model to consider all the kinds of complexity that might arise in a risk-return relationship; this is because participants have different risk appetites.

Ultimately, any model has its own specific limitations. Barth et al. (2001) state that when dealing with a complex environment in an imperfect market, no model will be able to describe, fully, the relationships being studied.

#### *Panel Data Modelling*

Because the observed sample was selected from the same companies over a period of time, the sample follows the data description of panel data. Panel data are known for having issues surrounding the selection of linear unbiased estimators and for the fact that there is an increased likelihood of the error term to be correlated to the independent variables (De Jager, 2008). Regression outputs that use panel data generally give a singular intercept coefficient and a single slope coefficient, while taking on the assumption that the cross sectional data is homogenous in nature. This results in unobserved firm effects and the potential for omitted variable bias impacting on the error term of the regression. The use of panel data techniques allows for regression modelling which factors in each given cross sectional input, or each given time period, to have a different intercept coefficient (De Jager, 2008). This helps to relax the homogeneity assumption through the use of fixed effect dummy variables.

There are two techniques used to approach accounting for the possibility of unobserved firm effects: these are the “random effect method” and the “fixed effect method.” The random effect method is



only appropriate when observations are drawn at random from a total population of data. In order to support the position that the random effect method is inappropriate in this study, a Hausman Test on the correlated random effects is run on the base model, as explained below, on each group of observations. A rejection of the null hypothesis would indicate that the random effect method is inappropriate and as such the fixed effect model should be chosen. (see “Fixed or random effect modelling – Hausman Test” below)

The fixed effect method for modelling allows for the adjustment of unobserved firm effects found in the error term (De Jager, 2008). The use of a fixed effect approach relies on relaxing the assumption that firms are homogenous and it also adjusts for omitted variable biases (De Jager, 2008). As such it would appear that the fixed effect method is the more appropriate one for the purposes of this paper.

There are two broad methods used to consider the omitted variable bias: these are the first difference approach and a dummy variable approach. If the error term is autocorrelated, then the dummy variable approach is not appropriate; this will be tested by using the Durbin-Watson test as stated above. Research suggests that the fixed effect method essentially models the change from the mean and therefore it is difficult to see if the error term is serially correlated (Stallkamp 2015:32). Preliminary results show that neither base models, under a fixed effects method, exhibit excessive autocorrelation. As such the dummy variable approach will be followed to account for the omitted variable bias.

Fixed effects specification modelling is performed by regressing all models initially with both the cross-section and period fixed effect specifications. Prior to the final model results, a test for redundant fixed effects is run on the given model. Whenever a cross-section or period fixed effect F score probability exceeds 0.005, the null hypothesis is rejected and the given fixed effect selection is removed from the modelling process. Whenever the null hypothesis is not rejected, the specification will remain as part of the given model.

### *Model Formation*

The regression analysis will follow the two broad categories: regressions based on banks and regressions based on non-financial firms. This analysis follows the approach set out by Zhan et al. (2015) and many other value relevance papers; the only major difference is that this paper will focus on South African sample data. The reason for including a data set of non-financial firms is to allow for the comparative analysis of the dependent variables.

Firstly: a base line regression model will follow the form of a model which derives from an equity-valuation model used by Ohlson (1995) and Zhan et al. (2015):

$$MVE_{jt} = \alpha_1 + \alpha_2 BVE_{jt} + \alpha_3 Earnings_{jt} + \varepsilon_{jt} \quad (\text{Hereafter referred to as the “base model”})$$

The constant term is  $\alpha_1$ . The coefficients  $\alpha_2$  and  $\alpha_3$  are valuation multiples for the relevant items while  $\varepsilon$  is an error term,  $j$  represents the firm and  $t$  represents the time period. As mentioned before, the  $MVE_t$  is taken from the data set three months after the firm’s financial year end, in line with the release deadline for the reporting of a company’s financial statements in terms of JSE listing requirements.

This base model will be used to determine the significance, and thus value relevance, of earnings and book values of equity for both financial and non-financial firms in the data set. It is important to assess whether the findings in the previous literature regarding the value relevance of earnings and book value of equity are consistent within the sample data of this paper. As discussed in the literature review, both



the financial and non-financial firms have shown earnings and book values of equity to be significant, with mixtures across which are more relevant than the other. As a base line, this hypothesis must first be tested for South African firm-specific data before the testing can be extended to include items of cash flow.

Secondly: the research approach will include a cash flow component in the regression:

$$MVE_{jt} = \alpha_1 + \alpha_2 BVE_{jt} + \alpha_4 CFO_{jt} + \epsilon_{jt} \quad (\text{Hereafter designated the "CFO extension model"})$$

All the previously defined terms are identical. In the CFO extension model, the inclusion of the  $\alpha_4 CFO_{jt}$  term provides a further explanatory variable. Thus, the cash flow from operations (CFO) is focused on in isolation as cash flow items of financing and investing activities are often seen in the literature on prior value relevance as less significant than the cash flow from operations. This was apparent from the literature survey: note Ball & Shivakumar (2005), Bath et al. (2005) and Rayburn (1986).

Zhan et al. (2015) note that evidence provided by Burgstahler and Dichev (1997) suggests that losses are less important than profits for equity valuations. As such, Zhan et al. (2015) include 'loss' interaction terms in their regression models. Although this paper acknowledges the robustness of including loss interaction terms, a review of the raw sample data used in this paper revealed only two instances of losses being incurred during a period by a firm across both sets of sample data. These loss instances were incurred by the same non-financial company and therefore these observations were excluded from the sample data in order to avoid a potential impact on the regression models and also to simplify the testing.

It should be noted that both sets of data, across all regressions, were run with full observations and with alternative sets of data that had been winzored so that all variables fell within three standard deviations on either side of the mean for the given variable. The winzored data set results were largely consistent with those of the unwinzored data. As such, the final models were run with the unwinzored (clean) data.

#### *Fixed or random effects modelling – Hausman Test*

$H_0$ : The p-value is greater than 0.05 and thus the random effect model is appropriate.

$H_1$ : The p-value is not greater than 0.05 and thus the fixed effect model is appropriate.

The base line models as described above were regressed using an assumed random effects selection on the cross sectional data. See Table 4A and Table 4B, in Appendix A for the resultant outputs. The p-value of 0.9415 (Table 4A) for the non-financial firm base line model is above the 5% threshold. Therefore, the null hypothesis is rejected and so the fixed effect model is deemed appropriate. The p-value of 0.3506 (Table 4B) for the financial firm base line model is also above the threshold. Therefore, the null hypothesis is rejected and the fixed effect model is appropriate.

Both sets of data and their respective observations will therefore be modelled using a fixed effect model applied to the cross sectional data.

### *Durbin-Watson Test for autocorrelation.*

The base line regression models for both the financial and non-financial firms are run without having a dummy variable present. Table 5A and Table 5B (Appendix A) display the resultant outputs from the regressions.

The base line regression model in respect of the non-financial firms gave a Durbin-Watson score of 1.894056 (Table 5A); this indicated that the data were autocorrelated to a slightly negative degree. Thus no additional dummy variables would be required.

The base line regression model in respect of the financial Firms gave a Durbin-Watson score of 1.909176 (Table 5B); this indicated that the data were only autocorrelated to a slightly negative degree. Thus no additional dummy variables would be required.

## *5. Results*

This section of the paper considers the results obtained using the regression models run for both the financial Firm selection and non-financial firm selection of data. The focus of this discussion of results is on the t-statistics of the regressed coefficients and their significance. The  $R^2$  and adjusted  $R^2$  are discussed only to interpret the goodness of fit for the particular regression and are not used as a benchmark across different regressions.

*Table 2 - Summarised Findings*

Base Model	Non-Financial Firms				Financial Firms		
	Coefficient	Probability	t-statistic		Coefficient	Probability	t-statistic
Earnings	4.1676	0.0000	5.5394		0.6420	0.1907	1.3221
BVE	0.1423	0.4508	0.7578		0.4502	0.0000	4.3549
CFO Extension Model							
Earnings	3.8995	0.0000	5.5799		0.6675	0.1626	1.4126
BVE	0.0767	0.7042	0.3810		0.4552	0.0000	4.4488
CFO	0.6359	0.0035	3.0112		-0.0696	0.2983	-1.0485

### *Base Line Model – Non-Financial Firms Regression. (Table 5A Appendix )*

Recall that the Hausman test (Table 4A) provided a chi-squared statistic of 0.120579 (Prob. 0.9415) rejecting the position that random effect dummy variables are appropriate for the model. The redundant fixed effects test (Table 2A) provided a t-statistic of 0.8039 (Prob. 0.5866) for cross-section fixed effects and a t-statistic of 4.1794 (Prob. 0.0001) for period fixed effects. Thus the resultant model contains a dummy variable that is consistent with fixing the impact of the periods only.

The coefficient for BVE in the non-financial base line model was 0.1423 with a t-statistic of 0.7578 (Prob. 0.4508) indicating that the BVE disclosure appears to have little or no value relevance for the given sample. The earnings coefficient, however, was 4.1675 with a t-statistic of 5.5394 (Prob. 0.0000) indicating that the earnings disclosure is value relevant for the given sample of data. The adjusted  $R^2$  for the model was 0.4699 which indicates that the model, in of itself, has a goodness of fit.

The results for the non-financial base line model indicate that the explanatory power of earnings far exceeds that of BVE for non-financial firms. The available literature has indicated consistently, not only over time but across geographic areas, that the significance of the earnings disclosure is greater than that of BVE. Therefore, the conclusions drawn from this regression are in line with the expectations as indicated in that literature.

#### *Base Line Model – Financial Firms Regression (Table 5B Appendix )*

The base line model for financial firms also rejected the Correlated Random Effects test (Table 4B) with a chi-squared statistic of 2.0962 (Prob. 0.3506). The redundant fixed effects test (Table 2B) provided a cross-sectional fixed effects t-statistic of 4.2896 (Prob. 0.0010) and a period fixed effects t-statistic of 5.9692 (Prob. 0.0000). These results indicate that dummy variables are to be included for both cross-sectional and period fixed effects in the model going forward.

The coefficient for BVE in the financial firms' base line model was 0.4502 with a t-statistic of 4.3549 (Prob. 0.0000) indicating that the BVE disclosure appears to have significant value relevance for the given sample. The earnings coefficient, however, was 0.6420 with a t-statistic of 1.3221 (Prob. 0.1907) indicating that the earnings disclosure has little or no value relevance for the given sample of data. The adjusted  $R^2$  for the model was 0.6852, which is a fairly high figure, thus indicating that the model has a goodness of fit.

It is interesting to note the clear contrast in the results provided by the two models. The BVE disclosure appears to be value relevant for financial firms and not relevant for non-financial firms. For the earnings disclosure the opposite is true.

#### *CFO Extension Model – Non-Financial Firms Regression (Table 6A Appendix )*

In simple terms, the CFO extension model aims to add an additional explanatory variable to the base line model described above. The purpose of this addition was to help in determining whether the CFO disclosure provided additional value relevance when compared with the base line model.

After adding in the CFO variable and rerunning the regression, the resultant model provided the following results in respect of the non-financial firms. (Table 6A)

Thus, the BVE disclosure had a coefficient of 0.0767 with a t-statistic of 0.3810 (Prob. 0.7042); again, these results proved that BVE disclosure was not statistically significant. The earnings disclosure had a coefficient of 3.8995 with a t-statistic of 5.5799 (Prob. 0.0000) which was slightly higher than in the base line model. The CFO disclosure had a coefficient of 0.6359 with a t-statistic of 3.0112 (Prob. 0.0035) showing that this, too, was a value relevant disclosure for the sample of non-financial firms. The adjusted  $R^2$  of the CFO extension model for non-financial firms was 0.3794; this indicates that the addition of an additional variable did not add to the correctness of fit for the model.

#### *CFO Extension Model – Financial Firms Regression (Table 6B Appendix)*

After adding in the CFO disclosure variable and rerunning the regression, the resultant model provided the following results in respect of the financial firm data. (Table 6B)

Thus, the BVE disclosure had a coefficient of 0.455157 with a t-statistic of 4.448841 (Prob. 0.0000); again, these results proved that the BVE disclosure was statistically significant. The earnings disclosure had a coefficient of 0.667466 with a t-statistic of 1.412552 (Prob. 0.1625) again providing little or no evidence of value relevance within the sample. The CFO disclosure had a coefficient of -0.069564 with a t-statistic of -1.048520 (Prob. 0.2983) showing that it was not a value relevant disclosure for the sample of financial firms. The adjusted  $R^2$  of the CFO extension model for financial firms was 0.682908;

this indicates that the addition of an additional variable did not add to the correctness of fit for the model.

## *Results discussion*

### *Non-Financial Firm Regressions.*

The financial statements presented by non-financial firms in South Africa have a similar format to the ones most commonly found by researchers elsewhere in the world. The quantum of earnings was found to have the strongest statistical significance in this study, showing that the users of financial statements find the disclosure of earnings to be informative. This finding is consistent with those of Beaver (1968), Easton and Harris (1991), Ramakrishnan and Thomas (1998), Landsman et al. (2007) and Zhan et al. (2015) who all found earnings relevance to be the most statistically significant disclosure item.

Interestingly the results of the regressions in this paper suggest, for non-financial firms, that book values of equity are not statistically significant. This is in contrast to what the literature would have suggested. With a p-value of 0.4508 in the base line model, the book value of equity disclosure is far from being significant. Here, it should be mentioned that in contrast, many prior value relevance papers find both disclosures (earnings and BVE) to be significant. This result, alone, may justify further research into the more common value relevance disclosures in a South African context. The notion that book value of equity has little informativeness for users of non-financial firms may be driven by the market's emphasis on earnings as a focal point for these types of business models. Without further research it would be difficult to try any interpret the reasons as to why the contrast between this papers results and other value relevance research exist.

One conclusion that can be drawn by the regressions discussed in this report is that the cash flow from operations disclosure seems to be statistically significant. If one takes into account the short operating cycle of those non-financial firms selected for the sample, the realisation of earnings into cash flow, and the accounting disclosures around this concept, are all appreciated by users of the financial statements. This finding is consistent with Collins et al. (1997) who argued that firms with shorter operating cycles will show greater value relevance on cash flow disclosures. The significance of cash flow from operations is also consistent with the findings of Rayburn (1986), Barth et al. (2005) and Zhan et al. (2015).

The adjusted  $R^2$  of each model indicates that there is a statistically acceptable level of fit in each model; this finding adds to the robustness of the results.

This paper first set out to establish whether value relevance, as previously researched, has consistent results with a sample of non-financial firms listed on the Johannesburg Stock Exchange. The overall results show that the data for those firms performs in line with expectations, as indicated in the literature studied, other than for the book value of equity disclosure.

### *Financial Firm Regressions.*

The second, and perhaps more important, part of this paper aimed to identify the differences in value relevance of the different disclosures between that of financial and non-financial firms. The literature

survey indicated that there was a need to focus on the value relevance of the cash flow from operations disclosure; this was because there appeared to be a shortage of literature on this issue. However some other interesting findings were observed too.

The findings of this study suggest that earnings disclosures are not value relevant for financial firms in South Africa. This finding is somewhat surprising as, according to the literature reviewed, earnings have almost always been seen to be value relevant in the given context of value relevance research. A p-value of 0.1907 in the base model shows that earnings are statistically insignificant for the given sample. Although this p-value is more significant than the non-financial firm's BVE p-value, the result is still somewhat surprising. This result would again suggest that more value relevance research is needed on the fundamental disclosures in a South African context. Zhan et al. (2015) have the most recent set of value relevance data for financial firms and in their paper earnings were found to be statistically significant. These findings are consistent with all others mentioned throughout the literature review, even when the sample focused on financial firms.

In accordance with the findings of other researchers, the regression models used in this study showed that the book value of equity was statistically significant for financial firms in South Africa, from a value relevance perspective. This finding suggests that book value of equity carries informational content for the users of financial statements provided by financial firms. This finding does not come as a surprise in view of the results of prior research mentioned throughout this paper. It is a commonly held idea that a typical financial firm's market values are more sensitive to balance sheet disclosures because of the nature of its business and the inherent level of leverage. This finding was indeed anticipated before the regression models were run.

Perhaps the most interesting conclusion that can be drawn from the regression results of the financial firm data is that cash flow from operations was proven to be statistically insignificant from a value relevance perspective. This conclusion indicates that cash flow from operations is not informative for the users. With a p-value of 0.2983 the regression outputs indicate that the cash flow from operations disclosure is quite far from having a significant relationship with the market value of equity. Furthermore, as the coefficient is negative, the relationship between cash flow from operations and market values is completely out of kilter.

## *6. Concluding remarks and suggestions for further investigation*

This paper provides insights into the information that firms should focus on more, when preparing their financial statements. Those insights arise from the review of the literature provided in this paper, as well from as the description of the development of the value relevance research method over time and also, by considering the accounting standards that govern the way firms report their financial results. It is clear that users of financial statements have contrasting requirements when looking at non-financial and financial firms. Standard setters should also, perhaps, take into consideration the results of researchers when developing those standards in future. Reporting is an expensive requirement for firms and so the resources used to create these reports must be optimised for their usefulness. Whenever firms are of the opinion that certain items of disclosure are not useful or irrelevant they make their views known with a view to cutting back on these areas of disclosure and in favour of emphasising more important and useful areas of disclosure.

This paper serves as a starting point from which further research should be developed. A better understanding of value relevance results in respect of the basic disclosures has previously been

obtained elsewhere in the world; there is a need to obtain a better understanding in a South African context. There is little value in testing the value relevance of detailed disclosures where there is a lack of understanding about what was previously found to be significant. The mixed results relating to the value relevance of book value of equity and earnings, presented in the results of this paper, prove that more needs to be done to establish the robustness of value relevance research on South African firms as a whole.

Regression based research has reached a point at which current modelling techniques are able to produce more accurate and descriptive results than in the past. The development of panel data style regressions allows researchers to consider a wider range of potential issues that may have created model misspecifications in the past.

Researchers throughout the world are aware of the potential problems with the modelling and results of accounting based disclosures in relation to market values. In view of this awareness, future research must continue to define narrowly the scope of the testing. The goal of research is to provide accurate and insightful answers to questions that are asked in the real world. This paper was written in the expectation of adding to that body of knowledge in a way that will create a path for future research aimed at defining better and more accurate answers.

## 7. Reference List

- Ball, R. & Brown, P., 1968. An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research*, 6(2), pp.159–178.
- Ball, R. & Shivakumar, L., 2006. The Role of Accruals in Asymmetrically Timely Gain and Loss Recognition. *Journal of Accounting Research*, 44(1), pp.207–242.
- Bao, B.H. & Bao, D.H., 2004. Income smoothing, earnings quality and firm valuation. *Journal of Business Finance and Accounting*, 31(December), pp.1525–1557.
- Barth, M.E. et al., 2005. Accruals, Accounting-Based Valuation Models, and the Prediction of Equity Values. *Journal of Accounting, Auditing & Finance*, 20(4), pp.311–345. Available at: <http://eprints.lancs.ac.uk/28784/>.
- Barth, M.E. et al., 1991. Accruals, Cash Flows, and Equity Values. *REVIEW OF ACCOUNTING STUDIES*, 4(3), pp.205–299.
- Barth, M.E. et al., 2012. Are IFRS-based and US GAAP-based accounting amounts comparable? *Journal of Accounting and Economics*, 54(1), pp.68–93.
- Barth, M.E., Beaver, W.H. & Landsman, W.R., 1998. Relative valuation roles of equity book value and net income as a function of financial health. *Journal of Accounting and Economics*, 25(1), pp.1–34.
- Barth, M.E., Beaver, W.H. & Landsman, W.R., 2001. The relevance of the value relevance literature for financial accounting standard setting: Another view. *Journal of Accounting and Economics*, 31(1-3), pp.77–104.
- Barth, M.E., Beaver, W.H. & Landsman, W.R., 2000. *The Relevance of Value Relevance Research*.
- Barth, M.E., Beaver, W.H. & Landsman, W.R., 1996. Value-Relevance of Banks' Value Disclosures under No. 107. *The Accounting Review*, 71(107), pp.513–537.
- Barth, M.E. & Clinch, G., 2009. Scale effects in capital markets-based accounting research. *Journal of Business Finance and Accounting*, 36(3-4), pp.253–288.
- Barth, M.E., Cram, D.P. & Nelson, K.K., 2005. Accruals and the prediction of future cash flows. *The Accounting review*, 76(1), pp.27–58.
- Beaver, W.H., 1968. The Informational Content of Annual Earnings Announcements. *Journal of Accounting Research*, 6, pp.67–92.
- Beaver, William H., McNally, M.L. & Stinson, C.H., 1997. The information content of earnings and prices: A simultaneous equations approach. *Journal of Accounting and Economics*, 23, pp.53–81.
- Beisland, L.A., 2009. A Review of the Value Relevance Literature. *The Open Business Journal*, 2(1), pp.7–27.
- Berger, A.N. & Bouwman, C.H.S., 2009. Bank Liquidity Creation. *Review of Financial Studies*, 22(9), pp.3779–3837.
- Burgstahler, D.C. & Dichev, I.D., 1997. Earnings, Adaptation and Equity Value. *The Accounting Review*, 72(2), pp.187–215.
- Christensen, T.E., Hoyt, R.E. & Paterson, J.S., 1999. Ex ante incentives for earnings management and

- the informativeness of earnings. *Journal of Business Finance and Accounting*, 26(December 1998), pp.807–832.
- Collins, D.W. et al., 1994. Lack of timeliness and noise as explanations for the low contemporaneous return-earnings association. *Journal of Accounting and Economics*, 18(3), pp.289–324.
- Collins, D.W., Maydew, E.L. & Weiss, I.S., 1997. Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics*, 24(1), pp.39–67.
- Coetsee, D. (2010). The role of accounting theory in the development of accounting principles. *Meditari Accountancy Research*, 18(1), 1-16.
- Danbolt, J. & Rees, W., 2008. An Experiment in Fair Value Accounting: UK Investment Vehicles. *European Accounting Review*, 17(2), pp.271–303.
- Dechow, P.M., 1994. Accounting & Economics The role of accounting accruals. *Journal of Accounting and Economics*, 18, pp.3–42.
- Dechow, P.M. & Ge, W., 2006. Discussion of “The persistence of earnings and cash flows and the role of special items: Implications for the accrual anomaly.” *Review of Accounting Studies*, 11, pp.297–303.
- Dechow, P.M., Hutton, A.P. & Sloan, R.G., 1999. An empirical assessment of the residual income valuation model. *Journal of Accounting and Economics*, 26(1-3), pp.1–34.
- Dhaliwal, D., Subramanyam, K.R. & Trezevant, R., 1999. Is comprehensive income superior to net income as a measure of firm performance? *Journal of Accounting and Economics*, 26(1-3), pp.43–67.
- Easton, P.D. & Harris, T.S., 1991. Earnings as an Explanatory Variable for Returns. *Journal of Accounting Research*, 29(1), pp.19–36.
- Easton, P.D., Harris, T.S. & Ohlson, J.A., 1992. Aggregate accounting earnings can explain most of security returns. *Journal of Accounting and Economics*, 15(2-3), pp.119–142.
- Ely, K. & Waymire, G., 1999. Accounting Standard-Setting Organizations and Earnings Relevance: Longitudinal Evidence from NYSE Common Stocks, 1927-93. *Journal of Accounting Research*, 37(2), pp.293–317.
- Fairfield, P.M. et al., 2002. The information content of earnings and prices: A simultaneous equations approach. *Journal of Accounting and Economics*, 77(3), pp.119–142.
- Francis, J. & Schipper, K., 1999. Have Financial Statements Lost Their Relevance? *Journal of Accounting Research*, 37(2), pp.319–352.
- Gu, Z., 2007. Across-sample incomparability of R2s and additional evidence on value relevance changes over time. *Journal of Business Finance and Accounting*, 34(7-8), pp.1073–1098.
- van den Honert, R., 1999. *Intermediate statistical methods for business and economics* Second., UCT Press.
- IFRS & IASB, 2014. *Who we are and what we do Our objective*, Available at: <http://www.ifrs.org/The-organisation/Documents/2013/Who-We-Are-English-2013.pdf> [Accessed August 9, 2015].
- De Jager, P., 2008. Panel data techniques and accounting research. *Meditari Accountancy Research*, 16(2), pp.53–68.
- Jagongo, A. & Mutswenje, V.S., 2014. A Survey of the Factors Influencing Investment Decisions : The Case of Individual Investors at the NSE. *International Journal of Humanities and Social Science*,



4(4), pp.92–102.

Kam, V., 1990. *Accounting Theory* 2nd ed., New York: John Wiley & Sons.

Khurana, I.K. & Kim, M.S., 2003. Relative value relevance of historical cost vs. fair value: Evidence from bank holding companies. *Journal of Accounting and Public Policy*, 22(1), pp.19–42.

Klimczak, K.M., 2009. Testing Value Relevance of Accounting Earnings in Emerging Markets. *SSRN Electronic Journal*.

Kothari, S.P., 2001. Capital markets research in accounting. *Journal of Accounting and Economics*, 31, pp.105–231.

Landsman, W.R., Miller, B.L. & Yeh, S., 2007. Implications of Components of Income Excluded from Pro Forma Earnings for Future Profitability and Equity Valuation. *Journal of Business Finance & Accounting*, 34(3-4), pp.650–675.

Lang, M.H., Landsman, W.R. & Barth, M.E., 2008. International Accounting Standards and Accounting Quality. *Journal of Accounting Research*, 46(3), pp.467 – 498.

Lev, B., 1989. On the Usefulness of Earnings and Earnings Research: Lessons and Directions from Two Decades of Empirical Research. *Journal of Accounting Research*, 27, p.153.

Lev, B. & Zarowin, P., 1999. The boundaries of financial reporting and how to extend them. *Journal of Accounting Research*, 37(2), pp.353–385.

Marquardt, C. & Wiedman, C., 2004. The effect of earnings management on the value relevance of accounting information. *Journal of Business Finance & Accounting*, 31((2-4)), pp.297–332.

Mulford, C. & Comiskey, E., 2009. *Cash Flow Reporting by Financial Companies: A Look at the Commercial Banks. Unpublished Working Paper, Georgia Institute of Technology Atlanta, US.*

Ohlson, J., 1995. Earnings, book-values, and dividends in equity valuation. *Contemporary Accounting Research*, 11(2), pp.661–687.

Penman, S.H. & Zhang, X.J., 2002. Accounting conservatism, the quality of earnings, and stock returns. *Accounting Review*, 77(2), pp.237–264.

Pope, P.F., 2005. Valuation Models , and the Prediction of. *Journal of Accounting, Auditing & Finance*, 20(4), pp.347–355.

PwC, 2010. *US GAAP , IFRS and Indonesian GAAP similarities and differences*,

Ramakrishnan, R.T.S.R. & Thomas, J.K., 1998. Valuation of permanent, transitory, and price-irrelevant components of reported earnings. *Journal of Accounting, Auditing & Finance*, 13(3), pp.301–336.

Rayburn, J., 1986. The association of operating cash flow and accruals with security returns. *Journal of Accounting Research*, 24(1986), pp.112–134.

Ryan, S.G., Tucker, J.W. & Zarowin, P. a., 2006. Classification and Market Pricing of the Cash Flows and Accruals on Trading Positions. *The Accounting Review*, 81(2), pp.443–472.

Ryan, S.G. & Zarowin, P.A., 2003. Why Has the Contemporaneous Linear Returns Earnings Relation Declined? *The Accounting Review*, 78(2), pp.523–553.

Scott, W.R., 2006. *Financial Accounting Theory* fifth edit., New York: Pearson.

Stallkamp, P., 2015. *The impact of firm size and industry on capital structure decisions*. University of Cape Town.

- Teets, W.R. & Wasley, C.E., 1996. Estimating earnings response coefficients: Pooled versus firm-specific models. *Journal of Accounting and Economics*, 21(3), pp.279–295.
- Torfason, A.B., 2014. *Cash Flow Accounting*. University of Gothenburg.
- Watts, R.L. & Zimmerman, J.L., 1978. Towards a Positive Standards Theory of the Determination of Accounting. *The Accounting Review*, 53(1), pp.112–134.
- Weldegabir, H., 2004. *The value relevance of accounting earnings and book values to share price on the industrial sector of the JSE securities exchange*. The Univeristy of Cape Town.
- Zhan, G., Li, W. & O'Hanlon, J., 2015. *The Informativeness of US Banks' Statements of Cash Flows*. Lancaster University Management School.

## Appendices

**Table 1 A Descriptive Statistics – Unscaled (R'000s)**

### Descriptive Stats Financial Firms Unscaled

MVE			Earnings			BVE			CFO		
Mean	72,941,271	Mean	6,212,080	Mean	30,343,924	Mean	4,983,171				
Standard Error	6,959,926	Standard Error	565,567	Standard Error	2,968,126	Standard Error	965,456				
Median	58,583,571	Median	4,996,000	Median	24,760,000	Median	1,715,647				
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A				
Standard Deviation	64,917,870	Standard Deviation	5,275,256	Standard Deviation	27,684,835	Standard Deviation	9,005,178				
Sample Variance	4,214,329,810,802,910	Sample Variance	27,828,330,466,441	Sample Variance	766,450,114,391,736	Sample Variance	81,093,223,834,291				
Kurtosis	1	Kurtosis	0	Kurtosis	0	Kurtosis	2				
Skewness	1	Skewness	1	Skewness	1	Skewness	1				
Range	275,466,212	Range	21,588,000	Range	112,630,521	Range	57,394,366				
Minimum	240,123	Minimum	(1,019,000)	Minimum	305,479	Minimum	(21,983,366)				
Maximum	275,706,335	Maximum	20,569,000	Maximum	112,936,000	Maximum	35,411,000				
Sum	6,345,890,585	Sum	540,450,998	Sum	2,639,921,382	Sum	433,535,893				
Count	87	Count	87	Count	87	Count	87				
Confidence Level(95.0%)	13,835,875	Confidence Level(95.0%)	1,124,310	Confidence Level(95.0%)	5,900,439	Confidence Level(95.0%)	1,919,264				

### Descriptive Stats- NonFinancial Firms Unscaled

MVE			Earnings			BVE			CFO		
Mean	62,595,924	Mean	3,132,390	Mean	17,308,973	Mean	2,353,602				
Standard Error	11,042,858	Standard Error	565,474	Standard Error	3,927,146	Standard Error	463,574				
Median	28,718,318	Median	1,500,000	Median	4,960,000	Median	919,400				
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A				
Standard Deviation	103,000,918	Standard Deviation	5,274,392	Standard Deviation	36,629,975	Standard Deviation	4,323,928				
Sample Variance	10,609,189,165,053,300	Sample Variance	27,819,209,501,410	Sample Variance	1,341,755,081,966,820	Sample Variance	18,696,353,403,097				
Kurtosis	13	Kurtosis	13	Kurtosis	15	Kurtosis	18				
Skewness	3	Skewness	3	Skewness	4	Skewness	4				
Range	582,756,617	Range	30,606,279	Range	222,040,922	Range	29,058,066				
Minimum	1,204,783	Minimum	151,000	Minimum	787,611	Minimum	(66,137)				
Maximum	583,961,400	Maximum	30,757,279	Maximum	222,828,533	Maximum	28,991,929				
Sum	5,445,845,385	Sum	272,517,938	Sum	1,505,880,667	Sum	204,763,340				
Count	87	Count	87	Count	87	Count	87				
Confidence Level(95.0%)	21,952,474	Confidence Level(95.0%)	1,124,125	Confidence Level(95.0%)	7,806,907	Confidence Level(95.0%)	921,554				

**Table 1 B – Descriptive Statistics Scaled**

Descriptive Stats - Financial Firms Scaled							
MVE		Earnings		BVE		CFO	
Mean	1.309020	Mean	0.122228	Mean	0.529736	Mean	0.139247
Standard Error	0.052953	Standard Error	0.010883	Standard Error	0.055480	Standard Error	0.040954
Median	1.210526	Median	0.098686	Median	0.466922	Median	0.084156
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	0.493911	Standard Deviation	0.101510	Standard Deviation	0.517485	Standard Deviation	0.381995
Sample Variance	0.243948	Sample Variance	0.010304	Sample Variance	0.267790	Sample Variance	0.145920
Kurtosis	7.127856	Kurtosis	19.107968	Kurtosis	56.276988	Kurtosis	11.808557
Skewness	2.098480	Skewness	3.089856	Skewness	6.859788	Skewness	2.018974
Range	3.245412	Range	0.952655	Range	4.746200	Range	3.409299
Minimum	0.546632	Minimum	(0.189551)	Minimum	0.077946	Minimum	(1.214216)
Maximum	3.792045	Maximum	0.763104	Maximum	4.824146	Maximum	2.195082
Sum	113.884697	Sum	10.633848	Sum	46.087068	Sum	12.114530
Count	87	Count	87	Count	87	Count	87
Confidence Level(95.0%)	0.105267	Confidence Level(95.0%)	0.021635	Confidence Level(95.0%)	0.110291	Confidence Level(95.0%)	0.081414

  

Descriptive Stats - NonFinancial Firms Scaled							
MVE		Earnings		BVE		CFO	
Mean	1.30399072	Mean	0.079371293	Mean	0.320315202	Mean	0.06603716
Standard Error	0.034131005	Standard Error	0.003711966	Standard Error	0.018781195	Standard Error	0.005895736
Median	1.308984407	Median	0.076695558	Median	0.267733942	Median	0.052254407
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	0.31835282	Standard Deviation	0.034622913	Standard Deviation	0.175179328	Standard Deviation	0.054991768
Sample Variance	0.101348518	Sample Variance	0.001198746	Sample Variance	0.030687797	Sample Variance	0.003024095
Kurtosis	0.497424219	Kurtosis	1.470879379	Kurtosis	0.821437418	Kurtosis	2.896667651
Skewness	-0.199526057	Skewness	0.61729605	Skewness	1.073955638	Skewness	1.638746964
Range	1.812985437	Range	0.20313274	Range	0.837037422	Range	0.280561081
Minimum	0.376339078	Minimum	0.002329082	Minimum	0.049422317	Minimum	-0.012167564
Maximum	2.189324515	Maximum	0.205461822	Maximum	0.88645974	Maximum	0.268393517
Sum	113.4471926	Sum	6.905302528	Sum	27.86742256	Sum	5.745232897
Count	87	Count	87	Count	87	Count	87
Confidence Level(95.0%)	0.067850192	Confidence Level(95.0%)	0.007379144	Confidence Level(95.0%)	0.037335781	Confidence Level(95.0%)	0.011720336

**Table 2 A**Redundant Fixed Effects Tests

Equation: Non-Financial Firms Scaled - Baseline

Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.803976	(7,75)	0.5866
Cross-section Chi-square	7.018512	7	0.4270
Period F	4.179351	(12,75)	0.0001
Period Chi-square	49.668132	12	0.0000
Cross-Section/Period F	2.903195	(19,75)	0.0005
Cross-Section/Period Chi-square	53.474334	19	0.0000

Result: Reject cross-section fixed effects

Accept period fixed effects

**Table 2 B**Redundant Fixed Effects Tests

Equation: Financial Firms Scaled – Base Line

Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.289575	(6,66)	0.0010
Cross-section Chi-square	28.647009	6	0.0001
Period F	5.969206	(12,66)	0.0000
Period Chi-square	63.937829	12	0.0000
Cross-Section/Period F	5.456430	(18,66)	0.0000
Cross-Section/Period Chi-square	79.302792	18	0.0000

Result: Accept cross-section fixed effects

Accept period fixed effects

**Table 3 A – Correlation matrix: Non-Financial Firms**

Correlation matrix between explanatory variables (Pearson coefficients)				
	MVE	BVE	EARNINGS	CFO
MVE	1.00000			
BVE	0.61337	1.00000		
EARNINGS	0.50710	0.63812	1.00000	
CFO	0.19240	0.13365	0.32054	1.00000

Significance at the 5% level (two-tailed). All terms defined consistent with the above definitions (pg 26)

**Table 3 B – Correlation matrix: Financial Firms**

Correlation matrix between explanatory variables (Pearson coefficients)				
	MVE	BVE	EARNINGS	CFO
MVE	1.00000			
BVE	0.27545	1.00000		
EARNINGS	0.36988	0.54779	1.00000	
CFO	0.34938	0.54208	0.52110	1.00000

Significance at the 5% level (two-tailed). All terms defined consistent with the above definitions. (pg 26)

**Table 4A**

Correlated Random Effects - Hausman Test – Test for Randomness

Equation: Base Line – **Non-Financial Firms**

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.120579	2	0.9415

Result: Reject test for randomness

**Table 4B**

Correlated Random Effects - Hausman Test– Test for Randomness

Equation: Base Line - **Financial Firms**

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.096150	2	0.3506

Result: Reject test for randomness

**Table 5A**Dependent Variable: MVE

Method: Panel Least Squares

**Equation: Non-Financial Firms Scaled - Baseline**

Periods included: 13

Cross-sections included: 8

Total panel (unbalanced) observations: 97

White period standard errors &amp; covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.930854	0.074110	12.56043	0.0000
BVE	0.142322	0.187820	0.757757	0.4508
EARNINGS	4.167587	0.752354	5.539400	0.0000

## Effects Specification

Period fixed (dummy variables) as per Redundant Fixed Effects Test

R-squared	0.469993	Mean dependent var.	1.301859
Adjusted R-squared	0.379504	S.D. dependent var.	0.316762
S.E. of regression	0.249518	Akaike info criterion	0.202718
Sum squared resid.	5.105270	Schwarz criterion	0.600869
Log likelihood	5.168190	Hannan-Quinn criter.	0.363711
F-statistic	5.193933	Durbin-Watson stat.	1.894056
Prob. (F-statistic)	0.000001		

**Table 5B**Dependent Variable: MVE

Method: Panel Least Squares

**Equation: Financial Firms Scaled – Base Line**

Periods included: 13

Cross-sections included: 7

Total panel (unbalanced) observations: 87

White diagonal standard errors &amp; covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.992070	0.046157	21.49345	0.0000
BVE	0.450186	0.103375	4.354875	0.0000
EARNINGS	0.641991	0.485573	1.322131	0.1907

## Effects Specification

Cross-section fixed (dummy variables) as per Redundant Fixed Effects Test

Period fixed (dummy variables) as per Redundant Fixed Effects Test

R-squared	0.758374	Mean dependent var.	1.309020
Adjusted R-squared	0.685154	S.D. dependent var.	0.493911
S.E. of regression	0.277139	Akaike info criterion	0.477910
Sum squared resid.	5.069199	Schwarz criterion	1.073130
Log likelihood	0.210899	Hannan-Quinn criter.	0.717587
F-statistic	10.35746	Durbin-Watson stat.	1.909176
Prob. (F-statistic)	0.000000		



**Table 6A****CFO Extension Model – Non-Financial Firms**

Dependent Variable: MVE

Method: Panel Least Squares

Periods included: 13

Cross-sections included: 8

Total panel (unbalanced) observations: 97

White period standard errors &amp; covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.931782	0.070791	13.16247	0.0000
BVE	0.076700	0.201314	0.380994	0.7042
EARNINGS	3.899536	0.698858	5.579871	0.0000
CFO	0.635937	0.211188	3.011233	0.0035

## Effects Specification

Period fixed (dummy variables) as per Redundant Fixed Effects Test

R-squared	0.476397	Mean dependent var.	1.301859
Adjusted R-squared	0.379433	S.D. dependent var.	0.316762
S.E. of regression	0.249533	Akaike info criterion	0.211181
Sum squared resid.	5.043589	Schwarz criterion	0.635876
Log likelihood	5.757721	Hannan-Quinn criter.	0.382907
F-statistic	4.913153	Durbin-Watson stat.	1.952732
Prob. (F-statistic)	0.000001		

**Table 6B****CFO Extension Model - Financial Firms**

Dependent Variable: MVE

Method: Panel Least Squares

Date: 05/30/16 Time: 18:42

Sample: 2003 2015

Periods included: 13

Cross-sections included: 7

Total panel (unbalanced) observations: 87

White diagonal standard errors &amp; covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.996010	0.047321	21.04809	0.0000
BVE	0.455157	0.102309	4.448841	0.0000
EARNINGS	0.667466	0.472525	1.412552	0.1626
CFO	-0.069564	0.066345	-1.048520	0.2983

**Effects Specification**

Cross-section fixed (dummy variables) as per Redundant Fixed Effects Test

Period fixed (dummy variables) as per Redundant Fixed Effects Test

R-squared	0.760337	Mean dependent var.	1.309020
Adjusted R-squared	0.682908	S.D. dependent var.	0.493911
S.E. of regression	0.278126	Akaike info criterion	0.492740
Sum squared resid.	5.028006	Schwarz criterion	1.116302
Log likelihood	0.565831	Hannan-Quinn criter.	0.743829
F-statistic	9.819738	Durbin-Watson stat.	1.866195
Prob. (F-statistic)	0.000000		